NUEXCO

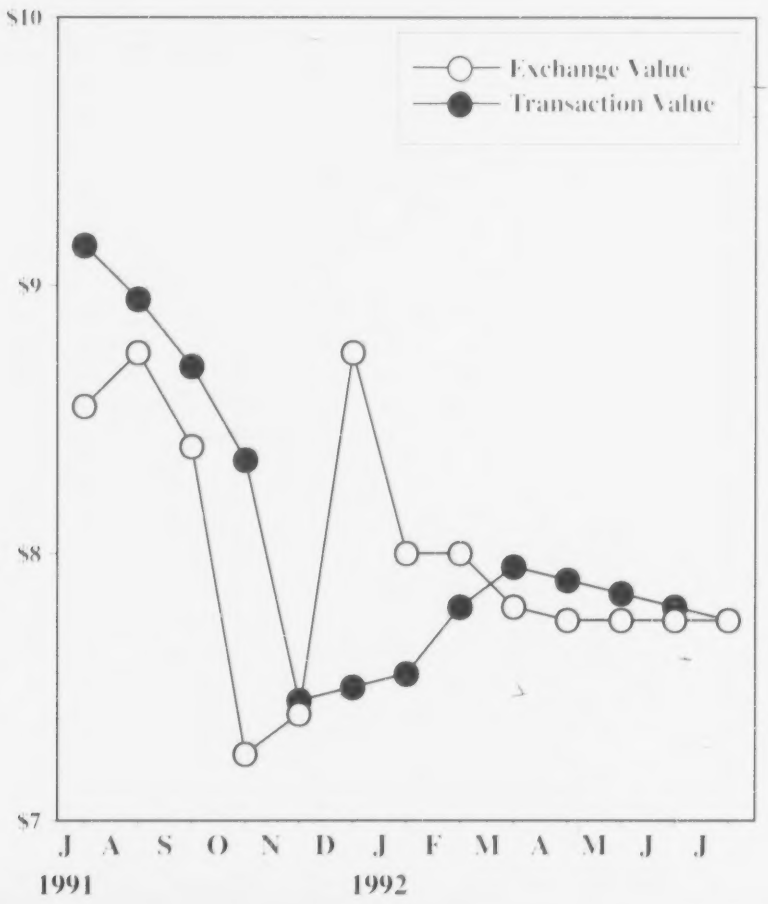
Monthly Report

August 1992 Number 288

USCEA Nuclear Fuel Supply Forum 13

Japan Nuclear Fuel, Ltd. 18

Uranium Industry Update 27



NUEXCO

INTERNATIONAL HEADQUARTERS

Oren L. Benton – Chairman
Earl E. Hoellen – Vice-Chairman and Chief Executive Officer
James J. Graham – President and Chief Operating Officer

Three Park Central, Suite 1000
1515 Arapahoe Street
Denver, Colorado 80202 USA

Telephone: (303) 899-4500
Fax: (303) 899-4555
Telex: 450202 (NUEXCO)

SERVICE LOCATIONS

LONDON, ENGLAND
NUEXCO Europe, Ltd.
The Exchange
71 Victoria Street
London, SW1H OHW England
Telephone: (44-71) 233-3083
Fax: (44-71) 233-3085
Telex: 267139 (299935 CCC G)

DENVER, COLORADO, USA
Three Park Central, Suite 1000
1515 Arapahoe Street
Denver, Colorado 80202
Telephone: (303) 899-4500
Fax: (303) 899-4555
Telex: 450202 (NUEXCO)

HONG KONG
NUEXCO Asia, Ltd.
1408 Shui On Centre
6-8 Harbour Road
Wanchai, Hong Kong
Telephone: (852) 824-3312
Fax: (852) 824-3320
Telex: 67206 (CNITC)

ZURICH, SWITZERLAND
NUEXCO Exchange AG
Leberngasse 15
4603 Olten, Switzerland
Telephone: (41-62) 320032
Fax: (41-62) 321450
Telex: 981600 (NUXCH)

SAN FRANCISCO, CALIFORNIA, USA
Building 1, Suite 105
3000 Sand Hill Road
Menlo Park, California 94025
Telephone: (415) 854-1510
Fax: (415) 854-2115
Telex: 470674 (NUEXCO SF)

SYDNEY, AUSTRALIA
Suite 2301 – Gateway
One Macquarie Place
Sydney, New South Wales 2000
Australia
Telephone: (61-02) 247-9999
Fax: (61-02) 247-9437

MOSCOW, RUSSIA
Bolshoy Cherkasskiy pereulok 4
Moscow, 103012
Russia
Telephone: (7-095) 924-2757
(7-095) 921-2722

WASHINGTON, D.C., USA
11 Dupont Circle,
Suite 505
Washington, D.C. 20036
Telephone: (202) 328-9250
Fax: (202) 328-6699
Telex: 451691 (NUEXCO DC)

NOTICE

This Report is prepared especially for Subscribers and is furnished to them for their use only. Except for internal use by Subscribers, no part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of NUEXCO. Neither this Report, nor copies of any portion thereof, may be lent, sold or given to non-Subscribers.

The information in this Report was gathered from sources NUEXCO believes to be accurate. However, NUEXCO makes no warranty, express or implied, and assumes no legal liability or responsibility for the accuracy, completeness or usefulness of any information contained herein.

© 1992 NUEXCO

ISSN 0742-4582

NUEXCO Monthly Report

August 1992
No. 288

Published by:
NUEXCO
Three Park Central
Suite 1000
1515 Arapahoe Street
Denver, Colorado 80202 USA
Telephone: (303) 899-4500
Fax: (303) 899-4555
Telex: (303) 450202 (NUEXCO)

Managing Editor
Treva E. Klingbiel

Assistant Editor
Kenten D. Lindberg

Production
Alan L. Wolcott

Subscriptions
Sandra K. Lauer

TABLE OF CONTENTS

Market Review 1
- Market Values Summary
- July Market Review
- Current Market Data

Recent Developments 13
- USCEA Nuclear Fuel Supply Forum
- Washington Focus
- Industry Briefs

Focus 18
- **Japan Nuclear Fuel, Ltd.**

The merger of Japan's two largest fuel cycle companies to form Japan Nuclear Fuels, Ltd. had long been anticipated and represents one of the most significant restructuring events in the country's nuclear industry. The formation of JNFL was a logical progression in the evolution of Japan's fuel cycle, bringing together complementary technologies and making an effort to improve community relations.

Analysis & Commentary 27
- **Uranium Industry Update**

Tough times for the uranium industry continued during the first half of 1992, as prices remained depressed and numerous mine closures or shutdowns occurred. Nevertheless, some producers continue to survive by focusing on their most profitable operations, while others have become part of the many consolidations streamlining the industry.

Nuclear Industry Calendar 33

Historical Market Data 34

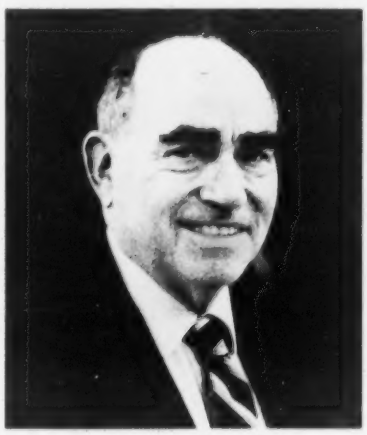
Government Statistics 41

© NUEXCO 1992

To Our Readers

CONCORD/NUEXCO is very pleased to announce that Dr. Bertram Wolfe has joined CONCORD's International Advisory Committee (IAC). Dr. Wolfe has been a vice-president of General Electric and General Manager of GE Nuclear Energy since 1987.

Dr. Wolfe received his B.A. in Physics from Princeton University in 1950 and his Ph. D. from Cornell University in 1954. He has worked at GE since 1955 in almost all phases of nuclear energy, including reactor design, fuel supply, waste management, and development of new reactor concepts. During the 1950s and 1960s, he led the nuclear core design effort on several new test and research reactors, including the Engineering Test Reactor, the GE Test Reactor, and the Radiation Effects Reactor. During 1969-71, he was Associate Director of Battelle Northwest Laboratories.



Dr. Wolfe returned to GE in 1971 and was given responsibility for GE's nuclear fuel supply and services business. He also was responsible for the GE advanced boiling water reactor program, which culminated in the advanced BWR now under construction at the Kashiwazaki-Kariwa site in Japan.

Dr. Wolfe is a member of the Board of Directors of the Nuclear Management & Resources Council, the US Council for Energy Awareness, the Nuclear Power Oversight Committee, and the American Nuclear Energy Council. He is a fellow and past president of the American Nuclear Society, a professional engineer in the state of California, and a member of the National Academy of Engineering and the Energy Engineering Board of the National Research Council. Dr. Wolfe holds a number of patents and is the author of over one hundred publications concerning nuclear energy, and energy in general. In June 1990, he received the Walter H. Zinn Award for outstanding contributions to nuclear power. CONCORD/NUEXCO is proud to welcome him to the IAC.

* * *

© NUEXCO 1992

Market Values Summary

NUEXCO Market Values	This Report July 31, 1992	Last Report June 30, 1992	12 Months Ago July 31, 1991
EXCHANGE VALUE [1]	**$7.75** / lb equivalent U_3O_8	$7.75	$8.55
UF_6 VALUE [2]	**$23.50** / kg U as UF_6	$23.60	$25.75
LOAN RATE [3]	**3.0%** / annum	3.0%	3.5%
CONVERSION VALUE [4]	**$1.50** / lb U as UF_6	$1.50	$1.50
SWU VALUE [5] **(0.3 % tails assay)**	**$66** / SWU	$65	$66
TRANSACTION VALUE [6]	**$7.75** / lb equivalent U_3O_8	$7.80	$9.15
Transactions	**35**	26	21
Months	**3**	3	3
Millions of Pounds	**8.5**	6.0	4.1

DEFINITIONS

[1] The **Exchange Value** is NUEXCO's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.

[2] The **UF_6 Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.

[3] The **Loan Rate** is NUEXCO's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.

[4] The **Conversion Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.

[5] The **SWU Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of enrichment services could be concluded as of the date indicated.

[6] The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:

a) Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;

b) At least ten transactions;

c) Transactions involving a sum total of at least 2 million pounds equivalent U_3O_8.

DERIVATIONS AND COMMENTS

- All **Market Values** are expressed in terms of US$.
- All **Market Values** are based on:
  - Data from recently completed transactions.
  - Data from pending transactions.
  - Firm bids to buy or borrow, and firm offers to sell or lend.
  - Prices purchasers or rates borrowers have expressed a willingness to pay, but for which NUEXCO is not aware of firm bids to buy or borrow and prices sellers or rates lenders have expressed a willingness to accept, but for which NUEXCO is not aware of firm offers to sell or lend.
- Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these **Market Values**.
- In the determination of prices, NUEXCO does not consider charges for transportation other than that customarily provided by suppliers.
- The prices of services or materials delivered under long-term contracts with primary suppliers are not considered in the determination of the listed values.
- For the **SWU Value**, NUEXCO converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight-percent (‰) ^{235}U and a product assay of 3.0 weight-percent ^{235}U, assuming feed costs corresponding to the NUEXCO **Exchange Value** and **Conversion Value** determined as of the same date.
- In calculating the **Transaction Value**, NUEXCO does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future **Exchange Values** or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it can not currently be determined.
- The sample time for the **Transaction Value** is extended as necessary to satisfy the minima for the number of transactions and quantity of material. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

© NUEXCO 1992

NUEXCO

JULY MARKET REVIEW

(as of July 31, 1992)

OVERVIEW

The uranium market remained very active in July, as a number of buyers entered the market and concluded transactions. Despite the high level of demand, supply was ample, and the July 31 Exchange Value remained unchanged at $7.75 per pound U_3O_8. In contrast, demand was lower in the UF_6 market, and the UF_6 Value declined $0.10, to $23.50 per kgU as UF_6, reflecting continued competition among sellers for the limited UF_6 demand.

Market activity was brisk during the month: fifteen near-term uranium transactions totalling 5.3 million pounds equivalent U_3O_8 were reported (**Table 1**). Eleven sales involved concentrates; two involved natural UF_6; and two, enriched uranium product (EUP). Year-to-date, near-term uranium sales volume now approaches 28 million pounds equivalent U_3O_8 in 82 transactions, slightly ahead of the record pace of 1990. In addition, two long-term concentrates transactions totalling 1.5 million pounds equivalent U_3O_8 were reported in July.

Table 1
NEAR-TERM URANIUM SALES SUMMARY

	July 1992		Year-to-Date	
	No. of Sales	Volume [1]	No. of Sales	Volume [1]
Concentrates	11	4.3	53	17.0
Natural UF_6	2	0.3	17	5.4
EUP	2	0.7	12	5.3
Total [2]	**15**	**5.3**	**82**	**27.7**

[1] Million pounds equivalent U_3O_8
[2] Due to independent rounding, columns may not equal total.

The Loan Rate remained unchanged at 3.0 percent per annum. Two natural UF_6 loans totalling more than 500 thousand pounds equivalent U_3O_8 were reported. The Conversion Value also was unchanged, remaining $1.50 per pound U as UF_6. No conversion transactions were reported.

The SWU Value increased by one dollar, to $66 per SWU, as sellers were less aggressive during July. Four enrichment transactions were reported, totalling more than 150 thousand SWU; two of the sales involved EUP.

NATURAL URANIUM AND CONVERSION

July witnessed a significant increase in market activity, as a number of buyers, many of them unexpected, entered the market. Despite the volume that cleared during the month, the July 31 **Exchange Value** remained unchanged at **$7.75** per pound U_3O_8, marking the fourth consecutive month at that level. However, prices in July were not stationary. A surge in supply led to increased sales competition, causing market levels to dip slightly in the middle of the month; but supply tightened gradually, and prices had firmed by month-end.

Eleven near-term concentrates sales were reported, totalling more than 4.3 million pounds equivalent U_3O_8. US utilities completed five purchases, accounting for the majority of the volume. Five producer purchases, plus a purchase of moderate quantity by an unidentified buyer, accounted for the balance. Most of the sales were made by intermediaries, in keeping with the norm of the past several months. Nearly all of the sales were concluded at price levels at or near the July 31 Exchange Value.

© NUEXCO 1992

The UF_6 market declined slightly in July, as demand remained weak. The **UF_6 Value** slipped $0.10, to **$23.50** per kgU as UF_6, in the face of strong competition among sellers to capture the limited UF_6 demand. UF_6 prices during most of July were fairly consistent, with most bids and offers staying within a narrow range around the previous UF_6 Value, before a modest decline in the latter part of the month. Reflecting the continued UF_6 supply/demand imbalance, uranium hexafluoride is now selling at a small discount compared to the sum of the values of its components.

Two natural UF_6 transactions were reported in July. An intermediary and a utility purchased a total exceeding 300 thousand pounds equivalent U_3O_8 from intermediaries; both near-term sales occurred at prices near the July 31 UF_6 Value.

* * *

In the **long-term uranium market**, two transactions were reported, totalling 1.5 million pounds equivalent U_3O_8. Utilities were the buyers in each case, purchasing concentrates from an intermediary and a producer for delivery during the period 1993 through 2000. One sale was concluded in June, the other during first quarter 1992.

* * *

The **Transaction Value** declined $0.05 for the fourth consecutive month, to **$7.75** per pound U_3O_8. This is only the second time in the 16-year history of the Transaction Value that it has equalled the Exchange Value, further illustrating the recent stability of the uranium spot market. (April 30, 1987 was the first time they were equal). The July 31 Transaction Value was based on 35 transactions over three months involving 8.5 million pounds equivalent U_3O_8.

* * *

Active uranium supply climbed to **7.0 million** pounds equivalent U_3O_8, up about 800 thousand pounds from its June 30 level. **Active uranium demand** dropped to **885 thousand** pounds equivalent U_3O_8 at the end of July—a decline of 1.6 million pounds. The resultant **supply/demand ratio** is **7.9** (**Table 2**).

* * *

The **Loan Rate** remained unchanged at **3.0** percent per annum. Two natural UF_6 loans were reported, in which intermediaries borrowed a total of more than 500 thousand pounds equivalent U_3O_8 from utilities. Loan supply remains abundant, exceeding loan demand by four million pounds.

* * *

The **Conversion Value** was unchanged, remaining **$1.50** per pound U as UF_6. The secondary conversion market was quiet during July: no transactions were reported.

Table 2
NEAR-TERM SUPPLY/DEMAND SUMMARY

	Active Supply[1]	Active Demand[1]
• Uranium (thousand lbs equivalent U_3O_8)	7,030	885
• Supply/Demand Ratio:	7.9	
• Loan (thousand lbs equivalent U_3O_8)	5,250	1,250
• Conversion (thousand lbs U as UF_6)	2,660	620
• SWU (thousand SWUs)	935	5

[1] Supply and Demand tables in the Market Review section of this Report provide details for each category.

© NUEXCO 1992

NUEXCO

ENRICHMENT SERVICES AND ENRICHED URANIUM PRODUCT

During the first half of the year, competition for the limited SWU demand was keen, leading to progressively lower prices. However, sellers were less aggressive in July, and the **SWU Value** edged up one dollar, to **$66** per SWU. The near-term enrichment market remains fairly thin: with few exceptions, spot sales throughout the year have involved only modest quantities of SWU.

Four near-term enrichment transactions were reported, in which two European and two US utilities purchased a total exceeding 150 thousand SWU. Two of the sales involved EUP and included almost 700 thousand pounds equivalent U_3O_8 of contained feed.

Table 3
ENRICHMENT PRICES
(July 31, 1992)

Prices	This Month Report 288	Last Month Report 287	12 Months Ago Report 276
NUEXCO SWU Value ($US per SWU)	66	65	66
US DOE SWU prices: ($US per SWU)			
USC	121.50[1]	121.50[1]	117.85[2]
AFC	153.00[3]	153.00[3]	153.00[3]
Requirements	157.00[3]	157.00[3]	157.00[3]
Incentive Price (IP2)	104.67[4]	104.67[4]	100.68[5]
Calculated worth of enriched UF_6[6]: ($US per KgU as UF_6)			
2.0 % ^{235}U	209	208	218
2.5 % ^{235}U	294	291	305
3.0 % ^{235}U	381	377	395
3.5 % ^{235}U	470	465	486
4.0 % ^{235}U	560	555	579
4.5 % ^{235}U	652	646	673

[1] Effective 10/1/91.
[2] Effective 10/1/89 to 9/30/91.
[3] Effective since 10/1/84.
[4] Provisional IP2 for FY92: Effective 10/1/91 to 9/30/92, for up to 30% of annual requirements.
[5] IP2: Effective 10/1/90 to 9/30/91, for up to 30% of annual requirements.
[6] Calculated using the NUEXCO Exchange Value, Conversion Value, SWU Value and 0.30 % ^{235}U tails assay.

© NUEXCO 1992

RECENT TRANSACTIONS

Uranium Sales[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8)	Price Within Percentage Range[2] of Current Exchange or UF_6 Value	Buyer	Seller	Remarks
5498	1995-2000	1,001-3,000	See remarks	Utility	Producer	Base Escalated Occurred earlier in 1992
5499	1992	101-300	98-102	Utility	Intermediary	
5500	1992	101-300	98-102	Utility	Intermediary	
5501	1992	101-300	98-102	Producer	R	
5502	1992	301-600	103-110	R	Intermediary	
5503	1992	101-300	98-102	Producer	Intermediary	
5504	1992-1993	1,001-3,000	98-102	Utility	Intermediary	
5505	1993-1994	101-300	R	Utility	Intermediary	
5506	1992	101-300	98-102	Intermediary	Intermediary	UF_6
5507	1993	50-100	98-102	Utility	Intermediary	UF_6
5508	1992	301-600	98-102	Producer	R	
5509A	1993	101-300	See remarks	Utility	Intermediary	Contained in EUP
5512	1992	101-300	98-102	Producer	Intermediary	
5513	1992	101-300	98-102	Producer	Intermediary	
5514A	1993	301-600	See remarks	Utility	Fabricator	Contained in EUP
5518	1992	101-300	98-102	Utility	Intermediary	
5519	1992	101-300	98-102	Utility	Intermediary	

R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

1 Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.

2 The ranges *Below 90, 90-97, 98-102, 103-110, Above 110,* represent percentages (rounded to whole numbers) of the appropriate current Exchange Value or UF_6 Value. The endpoints of each range are included within that range.

© NUEXCO 1992

NUEXCO

MARKET REVIEW

RECENT TRANSACTIONS

Natural Uranium Loans[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8)	Price Within Percentage Range[2] of Current Loan Rate	Borrower	Lender	Remarks
5510	1992	101-300	98-102	Intermediary	Utility	UF_6
5511	1992	301-600	98-102	Intermediary	Utility	UF_6

Conversion Sales[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U equivalent)	Price Within Percentage Range[2] of Current Conversion Value	Buyer	Seller	Remarks
No Conversion sales are reported						

Enrichment Sales[1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity[3] (thousand SWU)	Price Within Percentage Range[2] of Current SWU Value[4]	Buyer	Seller	Remarks
5509B	1993	Less than 50	See remarks	Utility	Intermediary	Contained in EUP
5514B	1993	50-100	See remarks	Utility	Fabricator	Contained in EUP
5516	1993	Less than 50	98-102	Utility	Intermediary	
5517	1992	Less than 50	98-102	Utility	Intermediary	

R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

1 Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.

2 The ranges *Below 90, 90-97, 98-102, 103-110, Above 110*, represent percentages (rounded to whole numbers) of the appropriate current Market Value. The endpoints of each range are included within that range.

3 If tails assay is unknown or unspecified, NUEXCO's calculation of SWU quantity assumes 0.30 -/o tails assay.

4 Prices are usually normalized to 0.30 -/o tails assay. When prices and SWU values are expressed as discounts from a reference price (e.g., **X** dollars less than DOE's USEC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

© NUEXCO 1992

SUPPLY AND DEMAND

Uranium Supply

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term [1]	Intermediate or Long-term [2]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
90-1078A*	235	—	1992-1993	UF_6e
91-1505*	1,250	—	1992-1993	
91-1507	500	—	1992	
91-1511	1,305	—	1992	UF_6/UF_6e
91-1512*	785	—	1992	UF_6
92-1194	200	—	1992	
92-1201A*	840	—	1993	UF_6e
92-1501A*	915	—	1992	UF_6e
92-1509	500	—	1992	U_3O_8/UF_6
92-1512*	500	—	1992	
91-1268	—	600 per year	1992-1999	
92-1129*	—	2,600 per year	1993-1999	
92-1185*	—	2,600 per year	1993-1999	
TOTAL	**7,030**			
INACTIVE	**3,050**			
AVAILABLE TO LOAN:				
ACTIVE				
92-1072	1,600	—	1992	UF_6
92-1074*	1,000	—	1992	
92-1195*	250	—	1992	
92-1214*	400	—	1992	
92-1503	2,000	—	1992	
TOTAL	**5,250**			
INACTIVE	**2,220**			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: 92-1077, 92-1114, 92-1183, 92-1187

© NUEXCO 1992

NUEXCO

MARKET REVIEW

SUPPLY AND DEMAND

Uranium Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term[1]	Intermediate or Long-term[2]	Delivery Period	Remarks
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1152A	15	—	1993	UF_6e
92-1225*	600	—	1992-1993	
92-1227*	270	—	1992	U_3O_8/UF_6
91-1184	—	350 per year	1993-1997	
91-1197	—	2,210	1992-1997	U_3O_8/UF_6
92-1164A	—	785 per year	1996-2001	UF_6e
92-1199*	—	2,000	1992-1999	
92-1223*	—	400 per year	1997-2000	U_3O_8/UF_6
92-1226*	—	300 per year	1994-1996	
TOTAL	**885**			
INACTIVE	**1,185**			
INQUIRIES TO BORROW:				
ACTIVE				
92-1505	500	—	1992	
92-1511	750	—	1992	
TOTAL	**1,250**			
INACTIVE	*None reported*			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: 92-1158, 92-1188, 92-1189, 92-1196, 92-1032, 92-1197, 91-1267, 91-1290

© NUEXCO 1992

SUPPLY AND DEMAND

Conversion Supply and Demand

NUEXCO Project Number	Quantity (Thousand Pounds U as UF_6) Within 3 Years	Beyond 3 Years	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
91-1500	400	—	1992	
91-1501	1,100	—	1992	
92-1507*	500	—	1992	
92-1190	660	—	1993	
TOTAL	**2,660**			
INACTIVE	*None reported*			
INQUIRIES TO PURCHASE:				
ACTIVE				
91-1275	620	—	1992-1993	
92-1178	—	3,300 per year	1992-1995	
TOTAL	**620**			
INACTIVE	**2,205**			

* New or revised since last month.
† Measured from the date of this Report.
Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: *none*

© NUEXCO 1992

NUEXCO

MARKET REVIEW

SUPPLY AND DEMAND

SWU Supply and Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term[1]	Intermediate or Long-term[2]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
90-1078B*	75	—	1992-1993	UF_6e
91-1509	200	—	1992	
91-1515*	100	—	1992	
92-1201B*	180	—	1993	UF_6e
92-1501B	130	—	1992	UF_6e
92-1124	250	250 per year	1992-1994	
TOTAL	**935**			
INACTIVE	*None reported*			
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1152B	5	—	1993	UF_6e
90-1196	—	60 per year	1995 on	
91-1152	—	2,700	1995-2001	
92-1016	—	170 per year	1996-2006	
92-1164B	—	180 per year	1996-2001	UF_6e
TOTAL	**5**			
INACTIVE	**140**			

* New or revised since last month.

1 For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

2 For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*

Active Projects removed since last month: 92-1191

© NUEXCO 1992

MARKET VALUES EXPRESSED IN SELECTED CURRENCIES[1]

Australia *to* Hungary

	Australia (dollar)	Belgium (franc)	Canada (dollar)	China (renminbi)	CSFR (koruna)	EC (ecu)	Finland (markka)	France (franc)	Germany (mark)	Hungary (forint)
EXCHANGE VALUE										
per pound equivalent U_3O_8 as Concentrates										
This Month (July 31, 1992)	**10.41**	**235.42**	**9.16**	**42.39**	**208.24**	**5.61**	**31.35**	**38.60**	**11.43**	**589.47**
Last Month (June 30, 1992)	10.36	243.02	9.29	42.39	210.80	5.77	32.17	39.73	11.81	595.66
12 Months Ago (July 31, 1991)	10.98	307.00	9.84	45.72	—.—	7.28	35.89	50.68	14.90	—.—
per kg U as Concentrates										
This Month (July 31, 1992)	**27.07**	**612.04**	**23.82**	**110.21**	**541.38**	**14.58**	**81.50**	**100.34**	**29.71**	**1,532**
Last Month (June 30, 1992)	26.92	631.81	24.16	110.21	548.03	14.99	83.64	103.29	30.71	1,549
12 Months Ago (July 31, 1991)	28.53	798.14	25.58	118.86	—.—	18.92	93.30	131.75	38.75	—.—
UF_6 VALUE										
per kg U as UF_6										
This Month (July 31, 1992)	**31.58**	**713.85**	**27.78**	**128.55**	**631.45**	**17.00**	**95.06**	**117.03**	**34.66**	**1,787**
Last Month (June 30, 1992)	31.53	740.04	28.30	129.09	641.92	17.56	97.97	120.99	35.97	1,814
12 Months Ago (July 31, 1991)	33.06	924.60	29.64	137.69	—.—	21.91	108.08	152.62	44.88	—.—
TRANSACTION VALUE										
per pound equivalent U_3O_8 as Concentrates										
This Month (July 31, 1992)	**10.41**	**235.42**	**9.16**	**42.39**	**208.24**	**5.61**	**31.35**	**38.60**	**11.43**	**589.47**
Last Month (June 30, 1992)	10.42	244.59	9.35	42.67	212.16	5.80	32.38	39.99	11.89	599.51
12 Months Ago (July 31, 1991)	11.75	328.55	10.53	48.93	—.—	7.79	38.41	54.23	15.95	—.—
per kg U as Concentrates										
This Month (July 31, 1992)	**27.07**	**612.04**	**23.82**	**110.21**	**541.38**	**14.58**	**81.50**	**100.34**	**29.71**	**1,532**
Last Month (June 30, 1992)	27.10	635.88	24.31	110.92	551.57	15.09	84.18	103.96	30.91	1,559
12 Months Ago (July 31, 1991)	30.54	854.15	27.38	127.20	—.—	20.24	99.85	140.99	41.46	—.—
CONVERSION VALUE										
per pound U as UF_6										
This Month (July 31, 1992)	**2.02**	**45.57**	**1.77**	**8.21**	**40.31**	**1.09**	**6.07**	**7.47**	**2.21**	**114.09**
Last Month (June 30, 1992)	2.00	47.04	1.80	8.21	40.80	1.12	6.23	7.69	2.29	115.29
12 Months Ago (July 31, 1991)	1.93	53.86	1.73	8.02	—.—	1.28	6.30	8.89	2.61	—.—
per kg U as UF_6										
This Month (July 31, 1992)	**4.44**	**100.45**	**3.91**	**18.09**	**88.86**	**2.39**	**13.38**	**16.47**	**4.88**	**251.53**
Last Month (June 30, 1992)	4.42	103.70	3.97	18.09	89.95	2.46	13.73	16.95	5.04	254.17
12 Months Ago (July 31, 1991)	4.25	118.74	3.81	17.68	—.—	2.81	13.88	19.60	5.76	—.—
SWU VALUE										
per SWU at 0.30% ^{235}U Tails Assay										
This Month (July 31, 1992)	**88.69**	**2,005**	**78.03**	**361.02**	**1,773**	**47.75**	**266.97**	**328.69**	**97.33**	**5,020**
Last Month (June 30, 1992)	86.85	2,038	77.94	355.55	1,768	48.36	269.84	333.23	99.07	4,996
12 Months Ago (July 31, 1991)	84.72	2,370	75.97	352.91	—.—	56.17	277.03	391.18	115.04	—.—

[1] Calculated using currency exchange rates for the last business day of the month, as published in *The Wall Street Journal*.

© NUEXCO 1992

NUEXCO

MARKET REVIEW

MARKET VALUES EXPRESSED IN SELECTED CURRENCIES[1]

Italy to United States	Italy (lira)	Japan (yen)	Netherlands (guilder)	S. Africa (comm. rand)	S. Korea (won)	Spain (peseta)	Sweden (krona)	Switzerland (franc)	Taiwan (dollar)	UK (pound)	USA (dollar)
EXCHANGE VALUE											
per pound equivalent U_3O_8 as Concentrates											
This Month (July 31, 1992)	**8,643**	**985.00**	**12.89**	**21.43**	**6,102**	**728.66**	**41.51**	**10.22**	**191.35**	**4.02**	**7.75**
Last Month (June 30, 1992)	8,935	974.72	13.31	21.48	6,124	745.91	42.68	10.65	188.90	4.07	7.75
12 Months Ago (July 31, 1991)	11,124	1,175	16.80	24.49	6,255	933.20	54.08	13.02	227.51	5.07	8.55
per kg U as Concentrates											
This Month (July 31, 1992)	**22,469**	**2,561**	**33.50**	**55.72**	**15,865**	**1,894**	**107.92**	**26.57**	**497.46**	**10.46**	**20.15**
Last Month (June 30, 1992)	23,228	2,534	34.61	55.84	15,921	1,939	110.95	27.70	491.09	10.58	20.15
12 Months Ago (July 31, 1991)	28,920	3,054	43.69	63.67	16,263	2,426	140.60	33.85	591.49	13.18	22.23
UF_6 VALUE											
per kg U as UF_6											
This Month (July 31, 1992)	**26,207**	**2,987**	**39.08**	**64.99**	**18,504**	**2,209**	**125.87**	**30.99**	**580.22**	**12.20**	**23.50**
Last Month (June 30, 1992)	27,208	2,968	40.54	65.41	18,649	2,271	129.96	32.44	575.22	12.40	23.60
12 Months Ago (July 31, 1991)	33,502	3,538	50.61	73.76	18,840	2,811	162.87	39.22	685.20	15.27	25.75
TRANSACTION VALUE											
per pound equivalent U_3O_8 as Concentrates											
This Month (July 31, 1992)	**8,643**	**985.00**	**12.89**	**21.43**	**6,102**	**728.66**	**41.51**	**10.22**	**191.35**	**4.02**	**7.75**
Last Month (June 30, 1992)	8,992	981.01	13.40	21.62	6,164	750.72	42.95	10.72	190.11	4.10	7.80
12 Months Ago (July 31, 1991)	11,905	1,257	17.98	26.21	6,694	998.69	57.87	13.94	243.48	5.43	9.15
per kg U as Concentrates											
This Month (July 31, 1992)	**22,469**	**2,561**	**33.50**	**55.72**	**15,865**	**1,894**	**107.92**	**26.57**	**497.46**	**10.46**	**20.15**
Last Month (June 30, 1992)	23,378	2,550	34.84	56.20	16,024	1,952	111.66	27.87	494.25	10.65	20.28
12 Months Ago (July 31, 1991)	30,950	3,268	46.75	68.14	17,404	2,596	150.46	36.23	633.00	14.10	23.79
CONVERSION VALUE											
per pound U as UF_6											
This Month (July 31, 1992)	**1,673**	**190.65**	**2.49**	**4.15**	**1,181**	**141.03**	**8.03**	**1.98**	**37.04**	**0.78**	**1.50**
Last Month (June 30, 1992)	1,729	188.66	2.58	4.16	1,185	144.37	8.26	2.06	36.56	0.79	1.50
12 Months Ago (July 31, 1991)	1,952	206.07	2.95	4.30	1,097	163.72	9.49	2.28	39.91	0.89	1.50
per kg U as UF_6											
This Month (July 31, 1992)	**3,688**	**420.30**	**5.50**	**9.15**	**2,604**	**310.92**	**17.71**	**4.36**	**81.65**	**1.72**	**3.31**
Last Month (June 30, 1992)	3,812	415.91	5.68	9.17	2,613	318.28	18.21	4.55	80.60	1.74	3.31
12 Months Ago (July 31, 1991)	4,303	454.31	6.50	9.47	2,419	360.94	20.92	5.04	88.00	1.96	3.31
SWU VALUE											
per SWU at 0.30% ^{235}U Tails Assay											
This Month (July 31, 1992)	**73,603**	**8,388**	**109.74**	**182.52**	**51,969**	**6,205**	**353.51**	**87.03**	**1,630**	**34.26**	**66.00**
Last Month (June 30, 1992)	74,937	8,175	111.66	180.16	51,363	6,256	357.93	89.35	1,584	34.15	65.00
12 Months Ago (July 31, 1991)	85,870	9,067	129.72	189.06	48,288	7,204	417.46	100.52	1,756	39.13	66.00

[1] Calculated using currency exchange rates **for** the last business day of the month, as published in *The Wall Street Journal*.

© NUEXCO 1992

RECENT DEVELOPMENTS

USA

USCEA Nuclear Fuel Supply Forum

Over 120 people attended the summer meeting of the US Council for Energy Awareness Nuclear Fuel Supply Forum in Washington, DC. Peter LeRoy, Licensing Manager for Louisiana Energy Services (LES), presented a status report on the company's progress in licensing its Louisiana enrichment plant scheduled for commercial operation in 1996. He indicated that a number of contentions from CANT (an environmental intervenor group), granted by the NRC's Atomic Safety and Licensing Board (ASLB), necessitate a hearing that could delay receipt of the LES construction license.

Troy Wade of International Disarmament Corporation spoke about Russian highly enriched uranium (HEU) available from dismantled nuclear weapons. He presented a pessimistic view of the timetable for its availability to the commercial market, the delay caused by a requirement for US verification and safeguards procedures at each stage of disassembly. Mr. Wade predicted extended discussions between the Russian and the US governments on these issues. He estimated the weapons material would not become available until after the year 2000 and would be available only in small quantities.

Frank Sailer from the Department of Commerce (DOC) spoke about anti-dumping procedures. While reviewing the schedule for the remainder of the year, Mr. Sailer noted there have been rumors of a settlement. He indicated that a settlement is the only way to bring a case to conclusion. If a suspension agreement, instead of a settlement, is reached, the dumping investigations of DOC and the International Trade Commission (ITC) normally would cease. However, any party to the agreement may request DOC and ITC to continue their investigations and to make a determination, as if the suspension agreement had not been made. If a conclusion is reached that dumping has, in fact, occurred, and if a violation occurs to the suspension agreement, DOC can immediately institute dumping duties.

Mr. Sailer was asked whether the Department has considered the substantial transformation issue. He responded that Commerce has not resolved the issue yet, but that he could envision a situation in which Russian U_3O_8 shipped to a third party, converted (substantially transformed), and imported into the United States could be assessed a duty on the value of the CIS portion of the material before conversion. He also was asked about duty on enriched uranium product (EUP) imported for fabrication into fuel pellets to be exported. Sailer responded that the material could be shipped into the US for fabrication, but that the owner of the EUP would have to pay the duty even if the material were exported later.

Mr. Sailer was asked about origin swaps and how DOC would prevent circumvention of the dumping order. He said DOC needs to investigate the issue further and he could not specify what action is contemplated, other than to say that there are specifically defined situations that DOC can investigate and in which it can intervene to prevent circumventions.

He also was asked why DOC ignored the information provided by the utilities in making its preliminary decision on the dumping issue. He responded that, for purposes of the DOC investigations into dumping, consumer interests, as represented by the utilities, are irrelevant. However, since it is the function of the ITC to look at the effects on the domestic industry, it could consider consumer interests. He clarified that DOE's input was evaluated by the Commerce Department because DOE is a producer.

Mr. Sailer ended his remarks noting that, from DOC's standpoint, a settlement with the republics is not the preferred solution because it is difficult to administer. Nevertheless, he asserted that if there is a settlement, it must be monitorable, in the public interest, and fairly settled.

The final panel of the Forum moderated by K. P. Lau of American Nuclear Energy Council. Wes Warren of the House Energy & Power Subcommittee, and Sam Fowler of the Senate Energy committee, presented a status report on the National Energy bill (HR 776), which includes the uranium enrichment restructuring title. Both speakers stressed that time is of the essence, as there is little legislative time left before campaigning begins. Further, Congress' first priority is to pass appropriations to keep the government operating beyond September. If a conference committee is to have enough time to work out a compromise, the Senate must pass the bill before the August recess. Some analysts are fairly pessimistic about the bill's chances.

© NUEXCO 1992

WASHINGTON FOCUS

by Linda L. Gunter

During July, Senate consideration of the National Energy Strategy bill (HR 776) was delayed by efforts to arrive at a compromise on several issues: DOE's desire to expedite its characterization of the Yucca Mountain spent fuel repository over the objections of Nevada's congressional delegation; and negotiation between Sen. Jay Rockefeller (D-WV) and Sen. Malcolm Wallop (R-WY) regarding a Rockefeller coal tax amendment that would require Western coal companies to contribute to Eastern coal miner pension funds. The Senate Energy & Water committee acted on DOE's FY1993 appropriations bill, and in a surprise move, committee chairman Bennett Johnston (D-LA) amended the bill by attaching both HR 776 and S 2166 to it, in order to force a showdown with the Nevada senators.

Senate Energy Bill Debated

◇ On July 23, a Senate vote on whether to consider the Energy bill before its August recess failed. For much of July there had been a number of objections (holds) on the bill, including complaints by the Nevada delegation about House bill language to move forward with characterization of Yucca Mountain, and a controversy over payments to Eastern coal miner pension funds from Western coal companies. On July 27, consent was finally achieved to begin debate on the bill. Conferees should be appointed in August so that committee staff can begin to draft a compromise bill. However, with limited time after the August recess before the election recess in mid-October and with so many bills left to enact, there may not be enough time to arrive at a compromise on the Energy bill. If it looks as though a final vote on the bill may not occur, Sen. Wendell Ford (D-KY) almost certainly will amend any other House-passed bill with the uranium enrichment bill to force the House into a conference on the issue this year.

Russian HEU

◇ On July 2, while the Senate considered the Freedom Support Act (a bill to provide assistance to the former Soviet Union), Sen. Alan Simpson (R-WY) offered an amendment to the act regarding Russia's weapons-grade uranium that may be sold in the commercial market. The amendment, which was approved, is a Sense of the Congress amendment that is considered an advisory communication to the Executive Branch. It asks the President to minimize the disruption to international uranium markets from sale of Russian HEU.

GAO Uranium Industry Report

◇ At the same time, Sen. Simpson released the US General Accounting Office's (GAO) report entitled "Unresolved Trade Issues Leave Uncertain Future for US Uranium Industry". The report concludes that the domestic industry faces an uncertain future and that the US Department of Energy (DOE) cannot be expected to create any new demand for uranium, since the government has large inventories and may someday convert its own excess HEU to commercial fuel. The report notes that while imports of CIS uranium now represent 17 percent of the US nuclear requirements, "the majority of US imports of foreign uranium continue to come from other countries such as Canada and Australia". The report also notes total US imports of natural and enriched uranium have increased over the last decade.

© NUEXCO 1992

The GAO report presents DOE's unclassified uranium inventory numbers as of the end of FY 1991. DOE has 12,294 metric tons (MT) of enriched uranium; 60,158 MT of natural uranium; and 380,681 MT of depleted uranium. Some of the natural uranium is actual utility feed to meet contracts, but DOE has 13,400 MT available for overfeeding. For the past four fiscal years, DOE has used about 3,300 MT each year as overfeed to reduce production costs. Under a cost optimization model, DOE plans to continue overfeeding for the next ten years.

The GAO report notes an interagency review group is currently considering the US government's options for its HEU. DOE's Office of Nuclear Materials will complete later this year a plan to consider strategic and inventory requirements. The GAO report also discusses Russian HEU, noting that high-level intergovernmental discussions are ongoing, with the Russian side expressing the willingness to sell the material and the US side interested in purchasing in order to reduce nuclear proliferation concerns.

Senate Subcommittee Approves DOE & NRC Appropriations Bill

◇ On July 21, the Senate Energy & Water Subcommittee approved its version of HR 5373, Appropriations for FY 1993 for DOE and the Nuclear Regulatory Commission (NRC). The Senate amount is approximately $22 billion, or almost $700 million greater than the bill passed by the House. Most of the additional money went to funding the Superconducting Supercollider Project, which the House had refused to fund. The subcommittee held most of the nuclear research and development programs at the same levels as those included in the House version of the bill, which represent reduced amounts from DOE's request.

In the Senate bill, uranium enrichment program appropriations were reduced an additional $14 million from the House bill, bringing the Senate's total program reduction to $70 million less than DOE's request. As in prior years, the committee noted DOE's efforts to restructure the enterprise, but insisted DOE begin predeployment activities for AVLIS. The Senate bill's AVLIS budget received a $10 million boost compared to the House budget, but is still $20 million short of DOE's request. The report specifies the action DOE must take on AVLIS. DOE is directed to select a commercial deployment contractor competitively by April 1, 1993, to direct the following pre-deployment activities:

1. Develop a transition plan to move the program from the laboratory into production.
2. Confirm technical performance.
3. Provide industrial perspective on the remaining demonstration activities.
4. Complete commercialization and risk studies.
5. Begin site selection, characterization, and EIS activities.
6. Proceed with engineering design of the plant.
7. Initiate NRC licensing activities.
8. Integrate AVLIS technology into the commercial fuel cycle.

The Senate committee agreed with the House and ignored DOE's request to create a environmental cleanup fee from utilities. Finally, the committee took $50 million of DOE's uncosted obligations from its enrichment program (revenue from earlier years) to pay for other programs funded by the Energy and Water bill. In total, the Senate moved $140.68 million from DOE's enrichment account to the Treasury. This amount is less than the $233.4 million removed from the account in FY 1992.

© NUEXCO 1992

INDUSTRY BRIEFS

Ontario Hydro Restarts Darlington 1

Ontario Hydro put its Darlington 1 881-MWe heavy water reactor back into service on July 13, after receiving approval from Canada's Atomic Energy Control Board (AECB). The reactor first went into pre-commercial testing in 1991, but had operated only sporadically, partly due to testing schedules, and partly to fuel channel problems first discovered in Unit 2 (the first Darlington unit to begin operation). Both reactors had been shut down since January 1992 to resolve a resonant frequency problem that had caused fuel bundle end plates to crack and led to excessive wear of bearing pads used to support pressure tubes. Ontario Hydro determined that five-bladed impeller pumps in the heat transport system were causing the problem, and replaced the impellers with seven-bladed models, reducing pressure pulse levels by a factor of three. The AECB approved Unit 1 for restart after this change, although it expressed some doubt as to whether this change will entirely solve the bearing pad problems. Consequently, the AECB will closely follow the initial restart results.

Due to governmental spending limits and the testing of new computer controls, the station is already five years behind and nearly 40 percent over budget. Ontario Hydro hopes to have all four Darlington units in operation before 1994.

Second Public Group Approves Phase II MRS Study

A Fremont County, Wyoming, advisory group has recommended that the county seek a Phase II-A grant from the Department of Energy to study further the possibility of siting DOE's Monitored Retrievable Storage (MRS) facility in the county. The 17-member advisory panel concluded that the potential economic benefits of the facility warranted additional examination. Fremont County is the second group to proceed to Phase II; the Mescalero Apache Tribe of New Mexico is proceeding with Phase II-A studies, and also is talking to New Mexico state officials who oppose the MRS facility. Wyoming governor Bill Sullivan and Senator Alan Simpson have not commented on the Fremont County studies so as not to bias the process.

◆ ◆ ◆

House Approves WIPP Land Transfer

The US House of Representatives voted on July 21 to transfer more than ten thousand acres of public land near Carlsbad, New Mexico, to the Department Of Energy. The 382-10 vote will enable DOE to begin storing nuclear waste at the Waste Isolation Pilot Plant (WIPP) in the salt caverns near Carlsbad. Initially, only relatively small amounts of transuranic waste from the country's nuclear weapons sites will be stored on a test basis.

Saskatchewan Uranium Review Panel Requests Far-Reaching Information

The Uranium Saskatchewan Association has warned the new Uranium Mine Development Review Panel (UMDRP) of Saskatchewan that the pursuit of answers to "irrelevant" questions in the UMDRP reviews could cause significant delays in review process. This, in turn, would delay new uranium projects, harm the province's largest industry, and could jeopardize the Saskatchewan economy. The Association also noted that it was assured by the UMDRP that project reviews would be completed in 18 months, but that these unnecessary questions make it less likely the deadlines would be met. In its letter to the UMDRP, the Association emphasized that the review panel "has not been given a mandate to investigate matters that are not directly related to the proposed developments." The Association pointed to guidelines, still only in draft form, issued to Cameco for the Cigar Lake and McArthur River projects, which request Cameco to discuss and evaluate such issues as "the social functioning of communities, substance abuse, crime and violence, family abuse, mental health problems, stress-related illness... the socio-economic status of women...," issues that appear to be unrelated to the development of the projects.

© NUEXCO 1992

NSP's Prairie Island Gets Fuel Storage Reprieve

On June 26, Northern States Power Company (NSP) received approval from the Minnesota Public Utility Commission (PUC) to purchase 17 above-ground storage casks for its Prairie Island station. This approval was critical, since without some form of additional spent fuel storage at the station, the fuel pools at the site would have been full by 1995, effectively leading to the shutdown of the reactors. While additional storage capacity was necessary, the PUC believed it was unlikely that DOE would begin accepting spent fuel by 1998, and feared that the temporary storage casks could become a *de facto* longer-term storage area. Thus, the PUC approved the purchase of only 17 casks of the 48 requested, as a way to keep pressure on DOE to make progress on a permanent waste repository.

The Prairie Island issue has become a focal point on whether DOE is legally obligated to take possession of spent fuel on January 31, 1998. Donald Hodel, former Secretary of Energy, recently stated that the intent of the contracts signed in 1984 between the utilities and DOE (under Mr. Hodel) was that DOE was obligated to take possession of spent fuel in 1998, regardless of the completion of a repository. However, current DOE officials have backtracked, stating that DOE is only obligated to take possession when a facility is complete. Numerous delays already have pushed DOE's target date for completion of a facility to 2010.

IMC Closes Uranium Recovery Operations

IMC Fertilizer Inc. announced on July 1 that it was commencing a phased shutdown of the 12-year old uranium recovery operation at its New Wales, Florida phosphate chemical facility, and that some uranium operations at its Plant City facility had already been shut down. IMC was recovering about two million pounds U_3O_8 equivalent per year from the two by-product facilities, with most of the output sold under long-term contracts. However, the contracts have expired and IMC is mothballing the uranium operations until market prices increase—by an unspecified amount. IMC cited the same market reasons when it closed uranium operations at its Barstow facility in 1985.

Ontario Hydro Ends 30-Year CNA Membership

Ontario Hydro has decided not to renew its membership in the Canadian Nuclear Association (CNA) after the current membership expires at the end of 1992. Marc Eliesen, chairman of Ontario Hydro, stated the company's position that "it is inappropriate for Ontario Hydro to support, or give preference to, external organizations which ... (advocate a) preference for any one particular form of generation vis-a-vis another." Citing the same reasons, Ontario Hydro will also be ending its membership in the Independent Power Producers Society of Ontario, the Canadian Renewable Energy Association, and several other groups.

Such actions appear to be directly in line with the anti-nuclear attitude of the new government controlled by the New Democratic Party (NDP). However, Eliesen claimed that the review of such memberships was initiated several years earlier, and the decision not to renew the memberships was not due to any NDP policy.

© NUEXCO 1992

NUEXCO

FOCUS

JAPAN NUCLEAR FUEL, LTD.

Just over a month ago, on July 1, Japan Nuclear Fuel Industries (JNFI) and Japan Nuclear Fuel Services (JNFS) merged to form the integrated nuclear fuel cycle company, Japan Nuclear Fuel, Ltd. (JNFL). The announcement in mid-January that the country's two major fuel cycle firms intended to merge had long been anticipated and represents one of the most significant restructuring events in Japan's nuclear industry. The merger forming JNFL was a logical progression in the evolution of Japan's fuel cycle, bringing complementary technologies together to encourage synergism, increased efficiency, and improved community relations.

The main production facilities of both JNFI and JNFS were located near the village of Rokkashomura, on the northern end of the main island of Honshu (**Figure 1**), and their headquarters were in Tokyo. The former JNFS was responsible for spent fuel reprocessing and also was building a high-level waste (HLW) management facility. The former JNFI focused on uranium enrichment and low-level waste (LLW) disposal. It was operating the first stage of a centrifuge enrichment plant and continuing to construct additional capacity. These responsibilities and activities will be assumed by JNFL, which now will be responsible for all JNFI and JNFS operations, including those at Rokkashomura.

JAPAN'S FUEL CYCLE STRATEGIES AND POLICIES

Japan's primary goal in its overall energy strategy is to reduce the country's dependence on imported energy supplies. This goal has been at the center of Japan's strategy since the oil crisis of the early 1970s and was reinforced by the supply disruption caused by the Gulf War. Japan's desire is to reduce its dependence on oil and concentrate on energy supply diversification and conservation. In order to accomplish this goal, the Ministry of International Trade and Industry (MITI) has emphasized nuclear power, saying it should be developed "to the greatest extent possible." In its most recent long-term plan, the government announced its intent to more than double installed nuclear capacity, to 72,500 MW (gross) by the year 2010, even though only about 25 percent of the additional plants necessary to meet this goal are under construction or have plans approved.

The goal to reduce its dependence on energy imports was the driving force behind the country's decision to adopt a closed fuel cycle. Japan is committed to reprocessing and recycling spent fuel to reduce further its dependence on non-domestic fuel supplies, and to developing a complete domestic nuclear fuel cycle. This policy led to the decision to establish the fuel cycle complex at Rokkashomura, complete with enrichment, reprocessing, and waste management facilities. The support provided by the policy also led to the development of a small experimental fast breeder reactor (FBR) at Joyo and the nearly-complete 280-MWe FBR prototype at Monju that eventually will utilize recycled fuel. The policy was likewise responsible for recent calls by utility leaders to build one new FBR per decade to use the energy available from recycled fuel. Several Japanese utilities have signed contracts with Cogema of France or British Nuclear Fuels, plc. (BNFL) of the United Kingdom to reprocess the utilities' spent fuel, until Japan develops enough domestic reprocessing capacity. The first domestically reprocessed fuel arrived at the Monju station in July 1992 from the reprocessing facilities at Tokaimura. The first foreign shipments of the reprocessed fuel and the related wastes are scheduled to arrive in Japan in 1993.

Japan also is active in research efforts directed toward different stages of the fuel cycle, and in promoting agreements for cooperation and information exchange. For example, JNFI concluded a cooperative agreement for information exchange on uranium enrichment with the US-based Martin Marietta Energy Systems and Urenco in Europe. Kansai Electric Power Company signed an information exchange agreement with Entergy Operations of the USA on nuclear power plant operation. Information exchange cooperation agreements regarding LLW disposal also have been reached with companies and organizations from Sweden, France, the UK, USA, Germany, and The Netherlands. Another example of its cooperative efforts is Japan's participation as one of three engineering centers for the International Thermonuclear Experimental Reactor

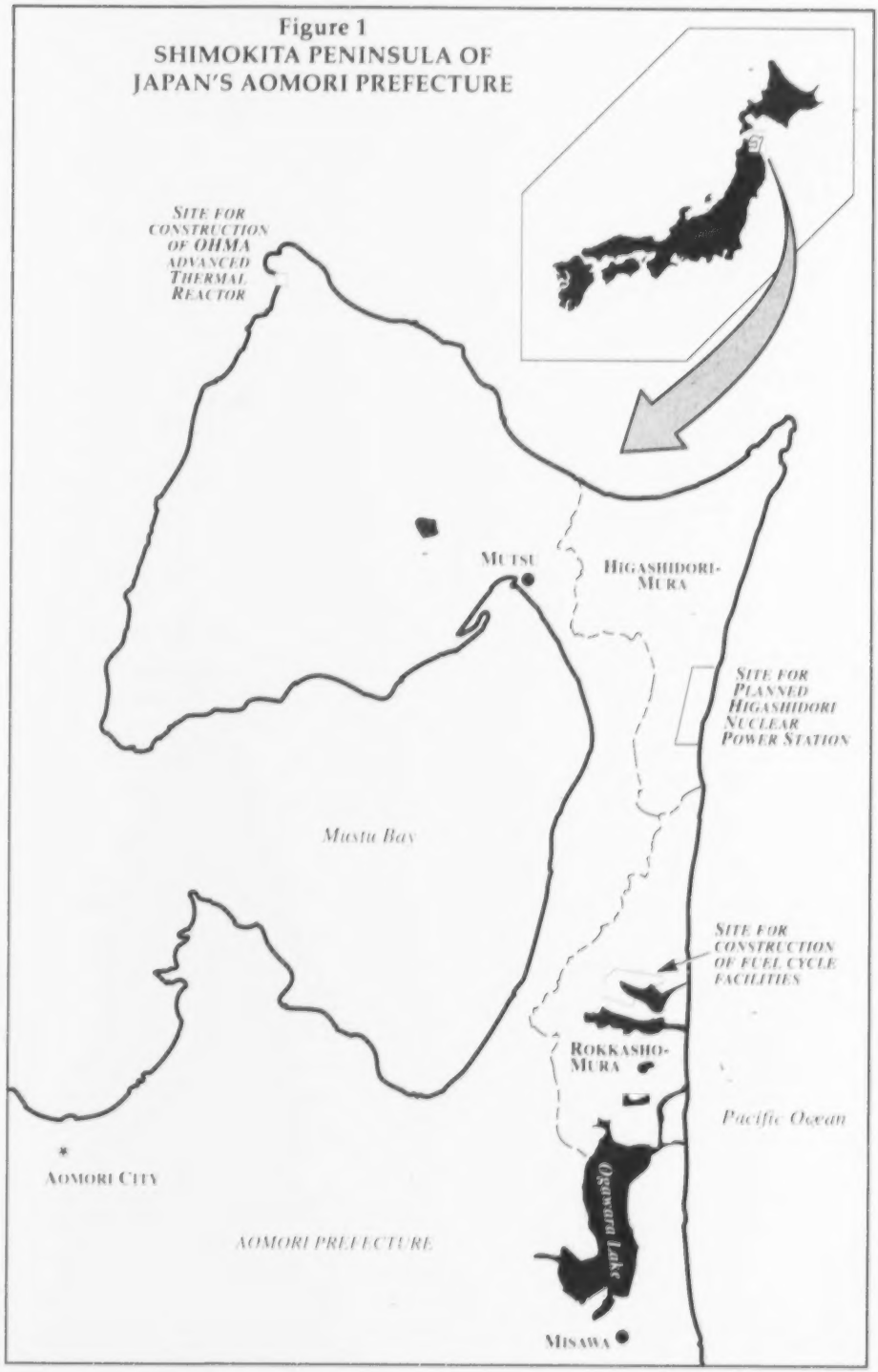
© NUEXCO 1992

(ITER) program, a combined fusion research and development effort of organizations from Japan, Europe, the USA, and the former Soviet Union.

ROKKASHOMURA

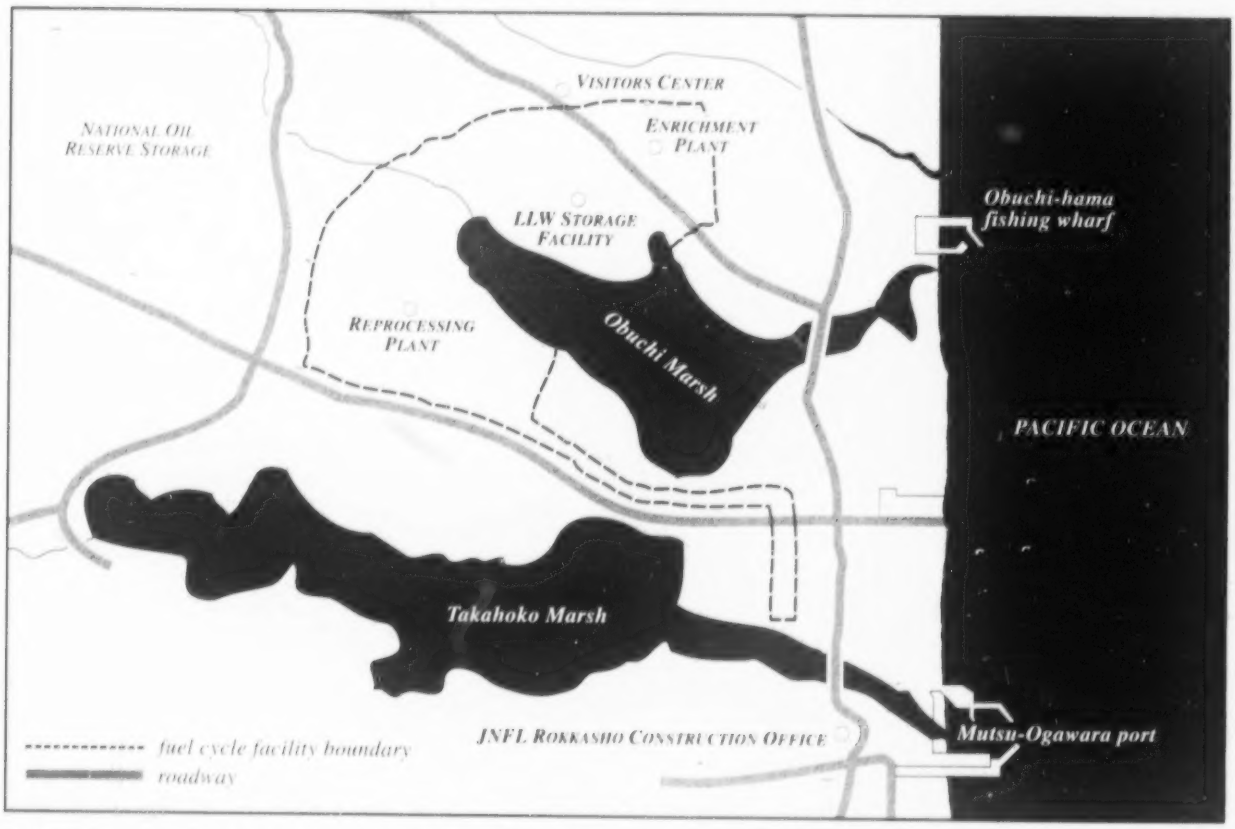
The Rokkashomura area in the Aomori prefecture first became well-known in 1979 when the Japanese government announced its decision to install the country's national oil reserve there as part of a major industrial development plan, entitled the Mutsu Ogawara Development Project. The area became more widely known when it became the site of the country's primary nuclear fuel cycle complex. In April 1984, the Federation of Electric Power Companies requested the cooperation of the Aomori Prefecture Authority in obtaining sites for three nuclear fuel cycle facilities. By April of the following year, both the Aomori prefecture and the village of Rokkashomura had given favorable replies, allocating 7.5 million square meters (2.9 square miles) for building sites. The same month, JNFI opened an office at Rokkashomura in preparation for construction work. The land purchase contract was concluded in 1986 and all the land finally transferred by 1988.

Figure 1
SHIMOKITA PENINSULA OF JAPAN'S AOMORI PREFECTURE



© NUEXCO 1992

Figure 2
ROKKASHOMURA NUCLEAR FUEL COMPLEX



When completed, the Rokkashomura complex will contain facilities for uranium enrichment, radioactive waste storage and disposal, and spent fuel reprocessing (**Figure 2**). Slightly to the south of the complex is the Mutsu Ogawara harbor, opened in November 1990, which will be used for unloading LLW and spent fuel casks to be processed at the Rokkashomura complex.

Because of the size of the fuel cycle complex and its importance to Japan's long-term energy plans, Rokkashomura has become a political focal point. Those opposed to expanding nuclear power have concentrated their efforts there, and government and industry have recognized that success of the projects at the site is critical to ensuring the long-term viability of the industry and the country's energy well-being. In 1989, nuclear opponents appeared to have achieved some moderate success: Rokkashomura elected a new mayor who supported freezing the fuel cycle project, and the local representative elected to the upper house of the Diet opposed the complex. However, subsequent elections have demonstrated that the majority of citizens from the Aomori prefecture are not opposed to the complex. The most crucial election occurred in the gubernatorial run-off of February 1991. After widespread and often spirited debate, incumbent governor Masaya Kitamura defeated two anti-nuclear opponents by a significant margin and vowed to continue the development project. Additionally, other prefecture elections held at the same time resulted in major gains by the Liberal Democratic Party (LDP), Japan's primary conservative political party, that supported the complex. Now, only four of 51 seats in the Aomori prefectural assembly oppose the complex. Clearly, the last election was an important win for the LDP and was viewed as an indication that the citizens of Aomori support the development in Rokkashomura.

© NUEXCO 1992

The siting of the fuel cycle complex already has brought economic benefits to the Rokkashomura region. In addition to the numerous jobs created and taxes received directly from the building of the complex, by the end of 1991, at least 18 new businesses representing 15 different companies had opened in Aomori prefecture. These establishments alone will create 2,400 new jobs in the area. Also, in July 1991, the Ministry of Home Affairs approved a new general tax in the Aomori prefecture, not stipulated in the local tax law, known as the "nuclear fuel material handling tax". It is similar to the nuclear fuel tax imposed by eleven other prefectures on nuclear power stations sited within their respective regions. The tax will be assessed on the fuel cycle complex operators at a rate of ¥7,100 per kilogram of enriched uranium produced by the facility and ¥29,800 per cubic meter of radioactive waste buried, and is estimated to yield ¥6.7 billion (US$53 million) in revenue over five years. Since revenue from general taxes not stipulated in local tax law is not subject to the restrictions placed on other prefectural taxes, the money created from this tax can be used to fund additional regional development programs and to improve the infrastructure of the area, making it more attractive to other businesses.

Given Japan's strategy to reduce its dependence on foreign energy sources and to develop a complete domestic fuel cycle for its nuclear program, the fuel cycle facilities of JNFL are of national importance. Correspondingly, a critical issue in promoting nuclear fuel cycle enterprises is to establish and maintain excellent community relations. The Japanese government and industry realize that the long-term success of the nuclear industry depends upon meeting community expectations for employment opportunities, educating the public about the industry, and alleviating the anxiety that may be created by growing nuclear-related businesses. To address these issues, both JNFI and JNFS had made concerted efforts to improve management of their businesses and to develop better public relations. A new public relations center at Rokkashomura is a prime example of the effort made to educate the public about the advantages and safety of nuclear power and the benefits of a supporting fuel cycle industry.

JNFL

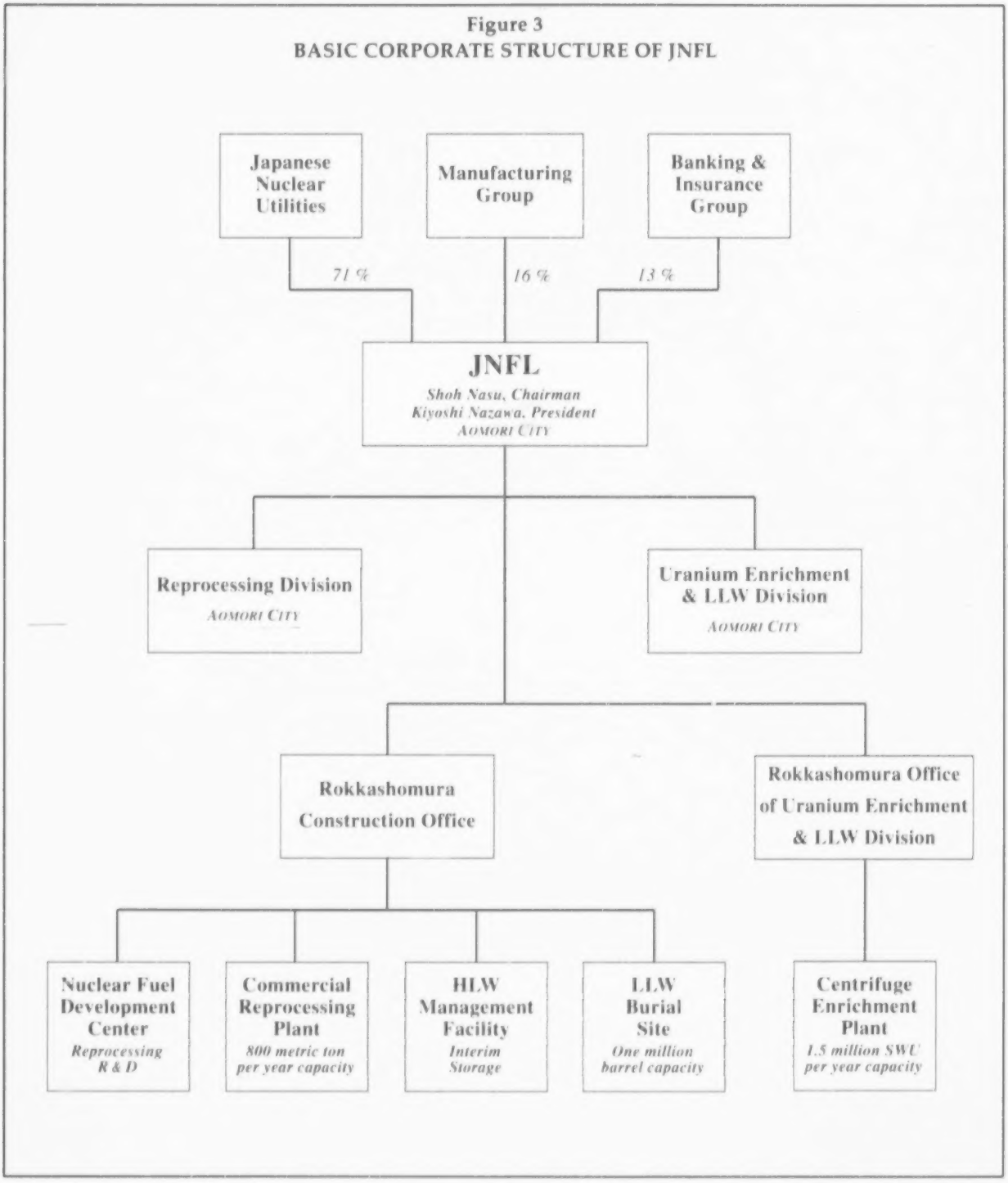
Given the common sites and related technologies of their fuel cycle facilities, the merger of JNFI and JNFS was a logical step forward in promoting the nuclear industry. One of the primary reasons the companies merged was to present a united front and consistent public relations effort, thereby facilitating improved communication and understanding with the local community and the nation as a whole. The formation of JNFL and the relocation of its headquarters into Aomori City more closely unite the company with the community by demonstrating JNFL's commitment to the project, its concerted efforts to operate the facilities safely, and its intent to keep the citizens of the prefecture involved.

Aomori prefecture had long requested that JNFI and JNFS locate their head offices in Aomori, and that the two companies merge. After more than six months of study in 1991, on January 22, 1992, following meetings of the boards of directors of both JNFI and JNFS, the companies announced their intent to merge as of July 1, 1992. The new company, Japan Nuclear Fuel Ltd., is now headquartered in the prefecture and employs 960 people. Shoh Nasu, president of Tokyo Electric Power and also president of the World Association of Nuclear Operators, has been named chairman of JNFL. Vice-Chairman of JNFI and JNFS, Kiyoshi Nozawa, was appointed president of the new entity.

Once merged, the two former companies will be on an equal footing and each will remain responsible for their same areas of expertise, with the technology department of JNFS becoming the Reprocessing Division and JNFI's technology department becoming the Uranium Enrichment and LLW Division (**Figure 3**). The headquarters operations, public relations, and clerical departments of the two companies have each been consolidated with one another. The major nuclear utilities in Japan are the primary owners of JNFL (71 percent), with 150 other industry-related companies owning the remaining 29 percent (**Table 1**). Total capitalization of JNFL now totals ¥120 billion (US$950 million). Financing of the construction projects will be provided primarily by outside financial institutions, including loans from the Japan Development Bank, City Cooperation and Financing Organization, and Seiko Cooperation and Finance Organization. The Japanese government will remain involved closely with the project through MITI, helping to coordinate financing, regional development, public relations, and other activities to promote growth of the Japanese nuclear industry.

© NUEXCO 1992

Figure 3
BASIC CORPORATE STRUCTURE OF JNFL



© NUEXCO 1992

Table 1
OWNERSHIP OF JAPAN NUCLEAR FUEL, LTD.

Owner	Share
Tokyo EPC[1]	19.47%
Kansai EPC	12.78%
Chubu EPC	8.76%
Kyushu EPC	6.62%
Tohoku EPC	5.33%
Chugoku EPC	4.73%
Shikoku EPC	3.64%
JAPC[2]	3.53%
Hokkaido EPC	3.27%
Hokuriku EPC	2.87%
Utility Group subtotal	71.00%
Manufacturing Group[3]	16.00%
Banking and Insurance Group[4]	13.00%
Total	100.00%

1 EPC=Electric Power Company
2 JAPC=Japan Atomic Power Company. It is majority-owned by the nine other utilities shown.
3 Includes companies such as Toshiba, Hitachi, and Mitsubishi Heavy Industries.
4 Together with the Manufacturing Group, 150 companies share ownership of the 29% non-utility portion.

Reprocessing Division (formerly JNFS)

Japan Nuclear Fuel Services Company, Ltd. was established in 1980, with management of spent fuel from nuclear power stations as its focus. The company developed expertise in the areas of reprocessing and transportation of spent fuel, as well as high-level radioactive waste management, particularly regarding wastes from reprocessing. As the JNFL Reprocessing Division, former JNFS employees will continue to work in these same areas. Prior to the merger, more than ¥80 billion had been invested in JNFS from its main stockholders, including the nine major Japanese electric utilities, Japan Atomic Power Company (JAPC), and 96 other industry-related companies. Virtually all of JNFS's 560 employees will be retained as part of JNFL.

The reprocessing division currently has two facilities in the early stages of construction. On May 6, JNFS broke ground on a new high-level radioactive waste management facility designed to store HLW in the form of vitrified solids produced as a result of spent fuel reprocessing. The building will store the wastes in canisters for an interim cooling period of 30 to 50 years; the wastes will then be moved to a permanent repository for final disposal. The interim storage facility, scheduled for completion in February 1995, will have a capacity of 1,440 canisters of vitrified solids (550 kg per canister). This new facility, when complete, will house the wastes generated from the reprocessing of Japanese spent fuel by BNFL and Cogema.

Construction of the Nuclear Fuel Development Center began on May 18, 1992, and is scheduled for completion in 1995. This facility is a reprocessing cold test and improvement facility located on the south side of the planned reprocessing plant. The development center will include testing and analytical laboratories, and will be completely equipped to simulate the planned reprocessing plant. The center will be used to test, develop, and refine the equipment and systems that will be used in the commercial reprocessing plant.

Together with the Power Reactor and Nuclear Fuel Development Corporation (PNC), which operates a pilot reprocessing plant at Tokaimura, the reprocessing division also will be responsible for the design, construction, and operation of an 800 metric ton-per-year reprocessing plant (**Figure 4**) estimated to cost ¥700 billion (US$5.5 billion). JNFS contracted in 1987 with Societé Generale pour les Techniques Nouvelles (SGN), a Cogema subsidiary, to provide the technology and engineering for the plant. The facility will be based primarily on technology used in Cogema's new UP3 reprocessing plant, but will use a BNFL nitric acid recovery process as well as German technology to remove iodine-129 from the chopping and dissolving operation. The permit for construction and operation of the reprocessing plant currently is under review by Japan's Nuclear Safety Commission, with commercial operation of the plant scheduled for late 1998.

© NUEXCO 1992

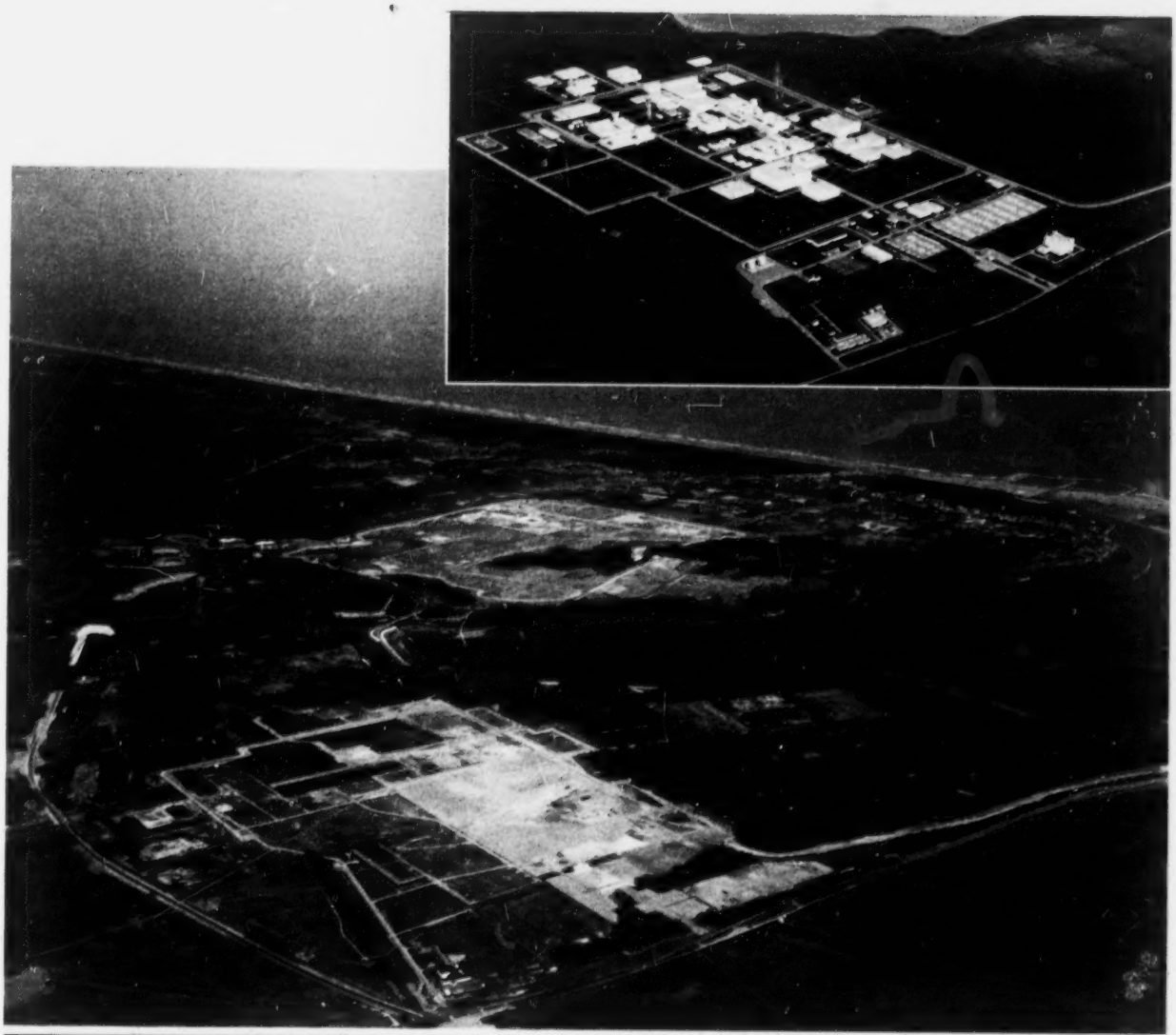


Figure 4 — JNFL Reprocessing Facilities. The main photo shows the reprocessing facilities in the early stages of construction. Note construction of the enrichment facilities on the far side of the Obuchi Marsh. The inset photo shows an artist's depiction of the completed reprocessing facility— completion is scheduled for 1998. (*Photo courtesy of JNFL*)

Uranium Enrichment and LLW Division (formerly JNFI)

The other half of the JNFL merger, Japan Nuclear Fuel Industries Company, Inc., was founded in March 1985 by the nine major electric utilities, JAPC (itself owned by the utilities), and numerous other companies in nuclear-related industries. (In total, 48 companies were owners prior to the merger). JNFI's four hundred employees handle two primary areas: uranium enrichment and low-level radioactive waste management.

In the enrichment area, Power Reactor and Nuclear Fuel Development Corporation was responsible for the national project of developing centrifugal separation enrichment technology. That project resulted in a 200 thousand SWU-per-year prototype enrichment plant operated by PNC at its Ningyo Toge complex since May 1989.

© NUEXCO 1992

In 1985, PNC and JNFI signed a technical cooperation agreement, facilitating the transfer of the expertise and experience gained by PNC to the commercial centrifugal enrichment plant being built by JNFI. JNFI applied for an operation permit in May 1987, submitting a request to the Prime Minister to allow operation of a commercial enrichment plant with a final capacity of 1.5 million SWU per year (**Figure 5**). The initial request sought permission to operate the first phase of the plant with a 600 thousand SWU annual capacity. The permit request was examined by the Science and Technology Agency (STA), the Atomic Energy Commission, and the Nuclear Safety Commission, and permission was granted in August 1988; construction began two months later.

Construction proceeded smoothly toward the initial start-up capacity of 150 thousand SWU per year. Final STA inspection approval was received in May 1991, and the first uranium arrived at the plant near the end of September. After some delays due to voltage variation in the plant's power supply, the plant reached full-scale commercial operation on March 27, 1992. The full capacity of 1.5 million SWU annually will be reached by adding capacity in increments of 150 thousand SWU each year until the year 2000. The second increment, which will bring the current annual capacity to 300 thousand SWU, is completely installed and currently undergoing start-up testing; it is scheduled to enter commercial operation within a year. Presently, the entire plant has been shut down to resolve further problems in the electrical system, although the shutdown is expected to be brief. The plant uses a tails assay of 0.25 percent, and is licensed for a maximum enrichment level of 5.0 w/o ^{235}U.

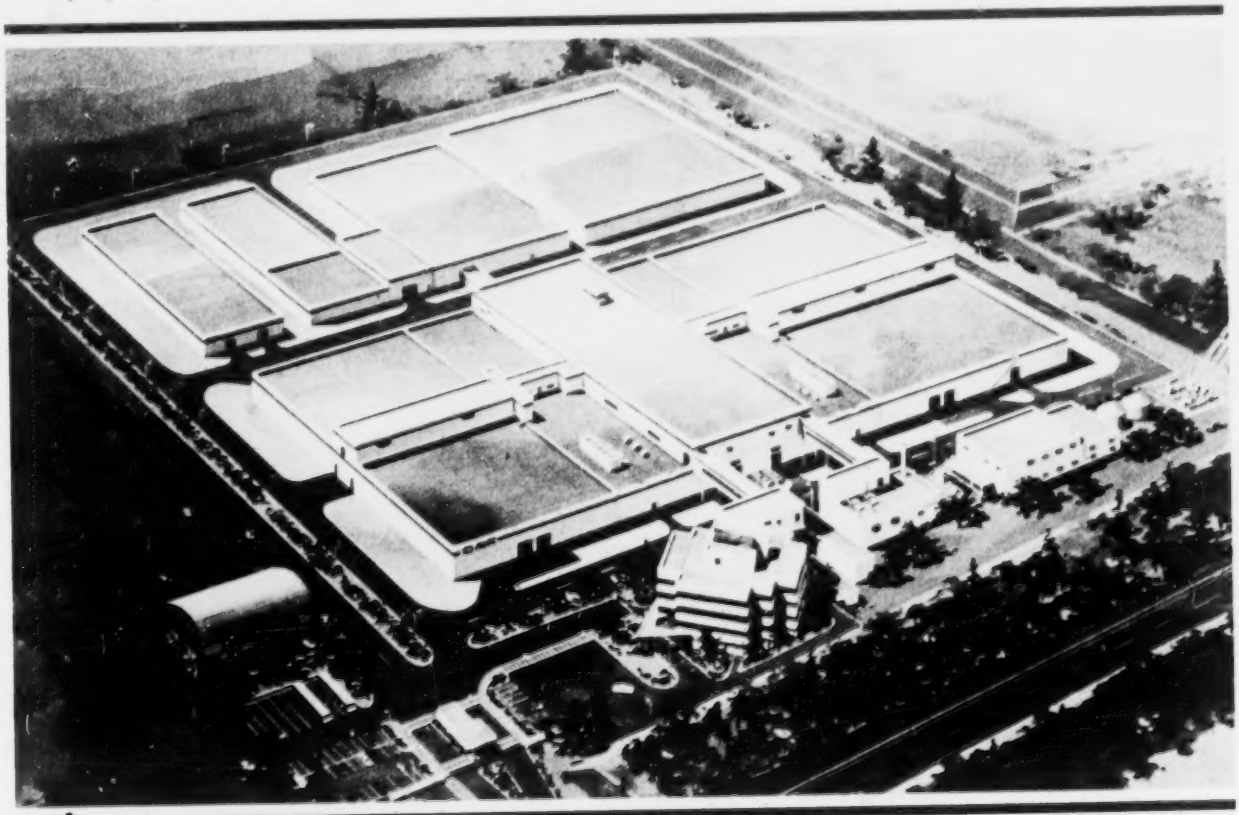


Figure 5 — JNFL's Centrifuge Enrichment Plant. An artist's rendering of the 1.5 million SWU-per-year facility, as it will appear when completed in 2000. The first stage of the plant, with a 150 thousand SWU-per-year capacity, went into commercial operation in March 1992. (*Photo courtesy of* JNFL)

© NUEXCO 1992

The initial operation permit of 600 thousand SWU will cover the first four capacity additions. In January 1992, JNFI submitted an operation change permit to add an additional 450 thousand SWU per year capacity for the plant, marking the start of the second phase of the plant's operation. For the remaining capacity additions, JNFI, in conjunction with PNC and the major utilities, was conducting research and development of new high performance materials for use in the centrifuge separators and will continue to do so as part of JNFL. Progress has been promising, and the use of the new materials to improve economic efficiency of the plant is expected in the final 450 thousand-SWU-capacity addition near the end of this decade.

Japan also has been planning to add a second, 1.5 million SWU-per-year plant, once the first plant is complete. This second enrichment facility is expected to use laser technology and to be built at Ningyo Toge. The process likely will be based upon PNC's Laser-J technology currently being developed at the Japan Atomic Energy Research Institute (JAERI).

The other primary area of responsibility of former JNFI business operations is low-level radioactive waste management. The company has begun construction of an LLW burial site at Rokkashomura, adjacent to the enrichment plant (**Figure 6**). Initial construction began in November 1990, and the first building cornerstone was laid on September 3, 1991. The initial operation permit allows burial of 200 thousand drums of waste, with a planned total capacity of one million drums. In addition to the standard permit procedure that requires STA approval and a second level of approval by the Atomic Energy Commission and Nuclear Safety Commission, public hearings also were conducted regarding the burial site and operation. The operation was fully approved and initial commercial operation of the LLW facility is planned for the end of this year.

CONCLUSION

Japan has made a strong commitment to nuclear power and an equally strong commitment to developing a supporting fuel cycle industry. The formation of JNFL is an important and positive step forward for the Japanese nuclear industry. Building on the mandate of support for the fuel cycle complex provided by the elections last year, the JNFI/JNFS merger and headquarters relocation to Aomori City will provide for better business operations, unite the company and the community, and improve the lines of communication to propel the development of the region to the benefit of the nuclear industry and the country as a whole.

Figure 6 — JNFL Enrichment and LLW Storage Construction Site. Buildings to the left in the photo are the enrichment facilities. The LLW disposal site, to open initially late this year, is near the right hand edge. (*Photo courtesy of JNFL*)

© NUEXCO 1992

URANIUM INDUSTRY UPDATE

Tough times for the uranium industry continued during the first half of 1992. In January, the Department of Energy announced its determination that the US uranium industry was non-viable in 1990, the seventh consecutive year for such a finding. Further, market analysts anticipate that the industry will again be found non-viable in 1991 and 1992. Spot uranium prices have remained near record-low levels, despite hopes that an affirmative finding on the anti-dumping petition filed by US interests against the former Soviet Union would boost the market. Several mines shut down or were permanently closed during the first six months of this year, exploration activity remains minimal, and the world uranium market remains vastly oversupplied. Moreover, there is a possibility this oversupply situation will be exacerbated by the millions of pounds of uranium and plutonium potentially available from the dismantlement of US and Soviet nuclear weapons.

Nevertheless, some uranium producers continue to survive by focusing on their most profitable operations. Industry consolidations have become a regular occurrence, and 1992 has been no exception, with several buyouts, mergers, joint-ventures, and other related events occurring again this year. World uranium production levels continue to shrink, and consumption remains well ahead of production. But the only way excess supply will be depleted is through inventory drawdown, eventually enabling a market price rise that will once again allow operators to produce uranium profitably.

WORLD PRODUCTION

Western World uranium production in 1992 has continued the steady decline evident over the past several years. Not including exports from China or the former COMECON nations, total 1992 uranium production may decrease by 15 percent, to approximately 55.5 million pounds equivalent U_3O_8.

Much of this decrease can be attributed to shutdown of production centers in North America: the open-pit mines at Shirley Basin and Rhode Ranch have been shut down; IMC has stopped its uranium by-product operations in Florida; processing at Denison's Elliot Lake facilities has come to a close; and the Rosita ISL project has halted production. In addition, production cuts have been made at facilities in Europe, Australia, and Africa. Although some projects have been closed due to economic ore depletion, the primary reason cited for the reduced production levels is low market prices. Large uranium stockpiles held by producers, utilities, and governments on virtually every continent continue to oversupply the market. Until this abundance of material is drawn down or otherwise designated, a substantial and sustainable price recovery is not possible.

© NUEXCO 1992

The most scrutinized event in 1992 has been the anti-dumping petition filed against the former Soviet Union by uranium producers with US operations. Speculation as to the outcome, the treatment of the former republics, the timing of the decision by the Department of Commerce (DOC), and the influence on the determination exerted by political and government events have all been widely iscussed.

On May 29, DOC issued a preliminary determination in the investigation. Based on data submitted by the petitioners and disregarding data submitted by the respondents—including Techsnabexport, Global Nuclear Services and Supply Ltd., and NUEXCO— DOC determined that the countries of Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Ukraine, and Uzbekistan had sold uranium in the USA at less than fair value, and accordingly, estimated a preliminary dumping margin of 115.82 percent. The Department found that the six other former republics had not produced, exported, or stockpiled any uranium and therefore were excused from the petition. A final determination is now scheduled for release by October 16.

Despite the complexity of the case—the suit was filed against the Soviet Union, a country that no longer exists—the finding of DOC was not unexpected. The only notable response to the investigation and to the preliminary determination has been the relative non-reaction by the market. Having learned expensive, and sometimes embarrassing, lessons in past attempts to anticipate price movements, market participants have watched recent events carefully and reacted cautiously. As a result, the fundamental oversupply situation has remained the dominant market influence, and prices have been relatively stable at their current low levels.

INDUSTRY CONSOLIDATIONS

Similar to 1991, several consolidations have highlighted uranium industry activity in 1992. The most significant, first announced in mid-January, involved the purchase by Cogema, the French fuel cycle conglomerate, of a majority share in Urangesellschaft mbH (UG) of Germany. The sale, finalized in early June, gives Cogema a 70-percent interest in UG. Preussenelektra AG (PREAG), a wholly owned subsidiary of the German energy corporation VEBA, will retain a 15-percent ownership share, and Steag AG, also controlled by VEBA, will own the other 15 percent.

With the UG purchase, Cogema acquired a number of uranium assets, including: an additional 6.5-percent interest in Niger's Somair project; an indirect interest in Kiggavik (a property in the Baker Lake region of the Northwest Territories, providing geographic balance to its Canadian uranium ownership interests, all currently located in Saskatchewan—Cigar Lake, Cluff Lake, and McArthur River); additional shares in Energy Resources of Australia; a five-percent share of the Rössing deposit in Namibia; and a 25-percent interest in PRI's Gas Hills, Wyoming project.

Cogema also assumes control of UG's 49-percent interest in Internexco, a uranium marketing joint-venture between UG and Techsnabexport of Russia. This relationship could give Cogema another source of supply, as well as improved access to the newly opened east European marketplace. Additionally, UG's trading and brokerage activities will complement the business of Interuran, a company 75-percent owned by Cogema. Interuran is a well-established European intermediary, and also owns 25 percent of the Highland uranium project in Wyoming.

In another key event in 1992, Denison Mines, Ltd. and Total Compagnie Minière reached an agreement to develop jointly their neighboring uranium deposits in the Athabasca Basin of Saskatchewan. The agreement outlines that Denison will receive C$25 million in cash, as well as a 22-percent share in Total's Wolly project (McClean Lake) and use of the planned mill. The Wolly project is owned by Minatco, a wholly owned subsidiary of Total. In return, Total, the French mining firm, will acquire 70 percent of Denison's share of the Koongarra deposit in Australia, and will have the right to 70 percent of Denison's share of production from the Midwest project. The Wolly and Midwest projects are only about ten miles apart in northern Saskatchewan. Mineable reserves from the Wolly project have been estimated to contain 45 million pounds U_3O_8 at an average grade of 3.71 %/o U_3O_8. Midwest reserves are projected to total 36 million pounds U_3O_8 at an average grade of 4.5 %/o U_3O_8. The agreements are subject to many conditions, including Australian and Canadian government approval, but represent a major step forward for Denison and Total, and will provide significant efficiencies by using one large mill once the deposits are developed.

© NUEXCO 1992

In June, Energy Fuels Exploration Company announced the formation of a Russian-American joint venture for the mining, processing, and marketing of uranium—the first uranium joint-venture ever concluded with an entity from the former Soviet Union. Participants in the tripartite agreement include Energy Fuels, the Priargunsky Gorno-Himichesky Kombinat (located in Krasnokamensk, Russia), and Techsnabexport of Russia. The Priargunsky Kombinat was the largest uranium producer of the former Soviet Union, its production derived from large underground mines in the Chita region in eastern Siberia.

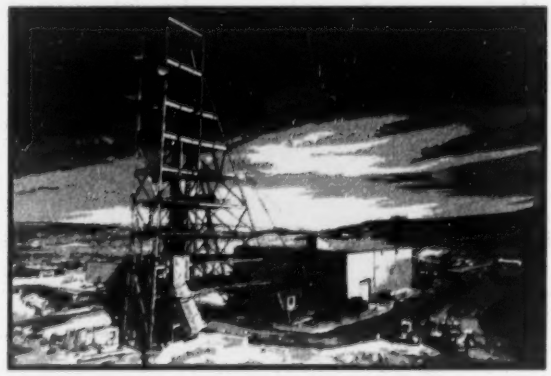
A few weeks earlier, Energy Fuels announced it had signed an agreement with Union Pacific Resources (UPR) to purchase UPR's Reno Creek uranium properties in the Powder River Basin of Wyoming. The acquisition is Energy Fuel's first in-situ leaching property; previously the company produced its uranium conventionally from high-grade breccia pipes in the Arizona Strip. Those mines are currently on standby; development drilling at the Arizona I mine ceased at the end of March.

The month of June had two other important announcements. Cameco Corporation of Saskatoon, Canada announced June 11 that it had purchased 100 percent of AGIP Resources, Ltd., a subsidiary of AGIP Minière S.p.A. of Italy, for C$49.75 million. AGIP Resources, which will be renamed Cameco Resources, Ltd., owns a ten-percent interest in the McArthur River uranium project, thereby effectively giving Cameco more than a 56-percent ownership share in the project. The purchase further solidifies Cameco's position as a leader in the uranium industry and also fits AGIP's strategy of exiting the uranium and precious metals sector.

On June 8, RTZ Corporation of the UK announced that it was selling its 51.5 percent interest in Rio Algom, Ltd., the Canadian mining firm. The sale of the 22.5 million common shares was underwritten by ten Canadian securities firms and was valued at C$362.3 million. RTZ cited potential conflict of interest concerns as the reason for the sale, as RTZ also owns 100 percent of Kennecott Corporation, another North American company with uranium mining interests.

Among its uranium interests, Kennecott is a partner with US Energy Corporation and its subsidiary, Crested Corporation, in the Green Mountain Mining Venture. The Green Mountain partners recently finalized their acquisition of the Sweetwater uranium mill in Wyoming from Unocal Corporation, a transaction that had been under negotiation for more than a year. The joint-venture partners will assume most of the environmental liabilities, estimated at $16.3 million, at the twelve-year-old mill. The acquisition will enable the joint-venture to use the existing mill to process ore from its nearby Green Mountain deposits, once mining begins.

One other potential industry-related buyout was notable, although a sale never took place. Geomex/Imperial Metals made it known early in the year that its 60-percent equity interest in the Crow Butte ISL project in Nebraska was for sale. The controlling interest was available for $45 million, but no buyers accepted. In June, Geomex/Imperial removed its offer to sell the interest, stating it was recommitted to production from Crow Butte. Production is expected to total approximately 400 thousand pounds U_3O_8 in 1992.



PRODUCTION CENTER CLOSURES

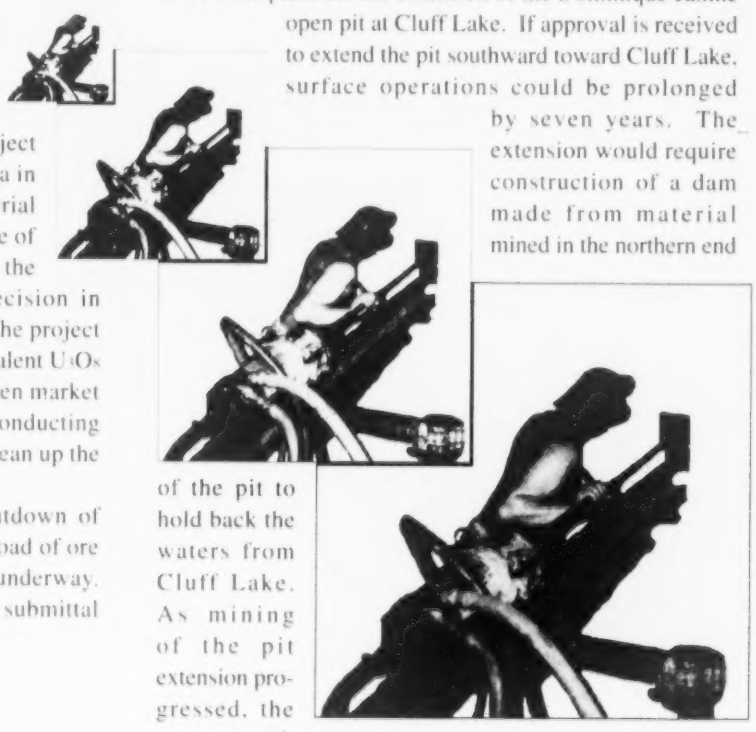
For the past several years, shutdowns and closures of uranium production facilities have become a common occurrence. In 1992, due to depleted reserves or low market prices, many production centers have ceased operations.

Two of the most notable closures were the cessation of mining operations at Rhode Ranch, Texas, and Shirley Basin, Wyoming. These facilities were the last two open-pit uranium mines in the USA. General Atomics subsidiary Rio Grande Resources, operated the Rhode Ranch mine through the end of 1991, but closed it permanently January 1, 1992, to begin full reclamation. Pathfinder Mines removed the final load of ore from the Shirley Basin

© NUEXCO 1992

open pit on March 25, and the last of the feed was processed at the mill on May 17. Pathfinder has begun reclamation of that site, as well as reclamation of its Gas Hills properties and dismantlement of its Lucky Mc mill.

Another major closure announcement was made by IMC Fertilizer on July 1. IMC stated it was shutting down its uranium by-product operations at its New Wales and Plant City phosphate chemical facilities until a market turnaround. The company had been producing at a rate of nearly two million pounds U_3O_8 per year, making it the largest US uranium producer prior to the shutdowns.



On April 1, Uranium Resources, Inc. (URI) discontinued production at its Rosita ISL project in south Texas. URI began production at Rosita in September 1990, and after some initial bacterial problems, was producing at an approximate rate of 750 thousand pounds U_3O_8 annually. Due to the depressed uranium market, URI made a decision in mid-1991 not to develop a second well field. The project had proven reserves of 6.2 million pounds equivalent U_3O_8 originally, and production restart is planned when market conditions improve. In the meantime, URI is conducting groundwater sweeping at a rate of 100 gpm to clean up the developed well fields.

Another closure in 1992 was the final shutdown of Denison Mines' Elliot Lake project. The last load of ore was removed in March and final cleanup is underway. Decommissioning plans are being prepared for submittal to Canadian regulatory agencies.

ACTIVE URANIUM OPERATIONS

Canada

Canada is maintaining its position as the world's preeminent uranium producer, with the largest and highest ore grade deposits in the world. Canada's 1992 production should exceed 20 million pounds equivalent U_3O_8, more than one-third of total Western World production.

Despite depressed market prices, exploration and development remains fairly active. Drilling activity reached as high as 19 rigs in March, the end of the Canadian winter drilling season. Cameco reported several development rigs in operation at McArthur River; Amok, Cameco, Cigar Lake Mining Corp., and Rio Algom all reported drilling operations, primarily underground rigs, at their respective properties. Minatco, PNC, and UG also reported that they had conducted development drilling.

The joint federal-provincial environmental assessment panel formed in 1991 to review all Saskatchewan uranium development plans began addressing several issues this year. In March 1992, the panel released for a 90-day public review the plans for the extension of the Dominique-Janine open pit at Cluff Lake. If approval is received to extend the pit southward toward Cluff Lake, surface operations could be prolonged by seven years. The extension would require construction of a dam made from material mined in the northern end of the pit to hold back the waters from Cluff Lake. As mining of the pit extension progressed, the waste rock would be disposed of on the lake side of the dam to build additional strength.

The federal-provincial panel also announced that it was still evaluating the environmental impact statements (EIS) of McClean Lake (Wolly Project) and the Midwest joint venture. The panel is evaluating the results of studies it had commissioned a private company to conduct on the EIS's. The findings of the studies, along with comments received from other review participants, are being assessed to determine if any additional information is required before public hearings are held regarding the two projects.

© NUEXCO 1992

On June 1, the panel released its draft guidelines and government information requirements for the EIS from the Cigar Lake and McArthur River projects. The draft guidelines were open to public comment until early July. Final guidelines will be issued later this autumn.

USA

The US uranium industry continues to shrink. US production may reach only 5.4 million pounds U_3O_8 in 1992, roughly a 31-percent decrease from 1991's level of 7.9 million pounds. The large production decline is due to the shutdown and closures at Rhode Ranch, Shirley Basin, Rosita, New Wales, and Plant City. Nevertheless, several operations are continuing to produce uranium, and some exploration and development activity is on-going. US drilling activity peaked at 26 rigs in June: twelve were production rigs and 14 were exploratory rigs. No underground rigs were operating, further indicating the absence of conventional mining in the USA.

The largest operating US uranium producer is Freeport Uranium Recovery, Inc. Freeport's uranium by-product operations from phosphate production at Donaldsonville and Uncle Sam are projected to produce 1.1 million pounds U_3O_8 in 1992. The Highland uranium project, operated by Power Resources, Inc. (75 percent owned by PRI and 25 percent by Interuran), is expected to produce about 900 thousand pounds U_3O_8 this year, making it the largest remaining solution mining facility in the USA. Total Minerals' ISL facilities at El Mesquite, Texas and Christensen Ranch, Wyoming were restarted in 1991 and each is producing at a rate of 200 thousand pounds U_3O_8 annually. Other operating uranium production centers in the USA include Ferret's Crow Butte, and Rio Algom's Ambrosia Lake mine-water recovery operations.

Australia

Restrictive government policies, as well as depressed prices, remain major factors limiting uranium production and development in Australia. Olympic Dam is one of only two operating Australian producers. The company completed an expansion of its facilities during the first quarter of this year, boosting production capability by approximately 16 percent, to 3.1 million pounds U_3O_8 per year.

Energy Resources of Australia (ERA) is the other Australian operator, producing more than six million pounds U_3O_8 annually during the past few years from its Ranger open-pit operation. However, market conditions have led ERA to cut production nearly in half using a novel means to implement the cutback. The company will use a reduced member of employees to mine ore for half a year, then those same employees will process the ore at the mill the other half of the year.

Under the government's so-called three-mine policy, uranium exploration has been minimal in recent years. However, for the first time in twenty years, three companies have received permission to explore in the Arnhem Land region in Northern Australia. The potential of this mineral-rich area is immense, but has effectively been off-limits to exploration for some years. Noble Resources of Australia recently purchased Uranerz Australia, Ltd. from Rheinbraun AG and PREAG of Germany for A$2.3 million. Using the exploration rights conveyed by the purchase, Noble has negotiated access rights in Arnhem Land; Queensland Mines and Japan's Power Reactor and Nuclear Development Corporation (PNC) are the only other companies with access rights. Expectations are high that substantial, new deposits of uranium and other base metals will be found in this region of the country that yielded the now-depleted Nabarlek deposit.

South Africa

Production levels in South Africa have decreased significantly for the ninth consecutive year. Only three companies of the ten members of the country's Chamber of Mines continue to produce uranium: the Vaal Reefs project, Western Areas, and Hartebeestfontein, along with non-member Palabora Mining Company. Total South African production during the first half of 1992 equalled only two million pounds U_3O_8; if this rate is duplicated in the second half of the year, it would represent approximately a four percent decrease from 1991's production total of 4.3 million pounds U_3O_8. Gengold's Buffelsfontein mine ceased uranium production near the end of 1991 and accounts for the majority of the decrease in output.

© NUEXCO 1992

France

Cogema remains the primary uranium supplier to Electricité de France, and as illustrated by its purchase of UG, continues to expand its access to diversified reserves. The company is planning to close its mining division in the Limoges region, but has expanded the activities of its Herault division. That division's Lodeve mine still has 18 million pounds U_3O_8 of reserves, enabling the mine to continue production through 1999. The Herault division also opened a new mine in February near Montpellier in southern France, and is considering two other new mines. Cogema has indicated that this region has the highest quality uranium in the country and is continuing exploration efforts in the area.

CONCLUSION

Depressed market prices caused by liquidation of excess producer, utility, and government stockpiles continue to determine the near-term fate of the world's uranium industry. While total consumption over the past five years is nearly twice that of worldwide production, uranium supplies still overwhelm demand. It will be several more years before inventories are reduced enough to warrant a sustainable price increase. Meanwhile, even low-cost uranium producers have been forced into lean and efficient operation, and often have consolidated with other companies to improve efficiencies further. When prices do recover, these surviving producers will be well-positioned to profit from the inevitable market upturn.

© NUEXCO 1992

NUCLEAR INDUSTRY CALENDAR

1992

Sept. 9-11 ***Uranium Institute 17th Annual Symposium*** (London, United Kingdom).
Contact: 44-71-225-0303; Fax: 44-71-225-0308.

Sept. 20-23 ***International Uranium Seminar '92*** (Hyatt Regency Hotel, Lake Tahoe, Nevada).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Sept. 20-25 ***World Energy Council 15th Congress*** (Madrid, Spain).
Contact: WEC Organizing Committee; 34-1-255-7204; Fax: 34-1-246-3540.

Sept. 21-23 ***2nd International Conference on Training for Operation & Maintenance in the Nuclear Industry***
(The Moat House International Hotel, Stratford-upon-Avon, United Kingdom).
Sponsored by the Institution of Nuclear Engineers.
Contact: INE Conference Secretary; 081-698-1500 or 081-698-4750; Fax: 018-695-6409.

Sept. 29-Oct. 1 ***Crisis/Emergency Information Planners' Workshop*** (Loews L'Enfant Plaza, Washington DC)
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Oct. 2-4 ***IAEA/NEA International Seminar on Decommissioning Policies*** (Paris, France).
Sponsored by the International Atomic Energy Agency and the OECD Nuclear Energy Agency.
Contact: IAEA Conference Service Section, P. O. Box 100, A-1400 Vienna, Austria.

Oct. 18-22 ***AMC Mining Convention*** (Las Vegas, Nevada).
Sponsored by the American Mining Congress.
Contact: AMC Convention Office; 202-861-2800; Fax: 202-861-7535.

Oct. 19-23 ***International Symposium on Geological Disposal of Spent Fuel, High-level and Alpha-bearing Wastes***
(Antwerp, Belgium).
Sponsored by the International Atomic Energy Agency.
Contact: IAEA Conference Service Section, P. O. Box 100, A-1400 Vienna, Austria.

Nov. 15-18 ***International Nuclear Energy Forum*** (Fairmont Hotel, Chicago, Illinois).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Nov. 15-20 ***American Nuclear Society Winter Meeting*** (McCormick Center Hotel, Chicago, Illinois).
Contact: ANS Meetings Department; 708-352-6611.

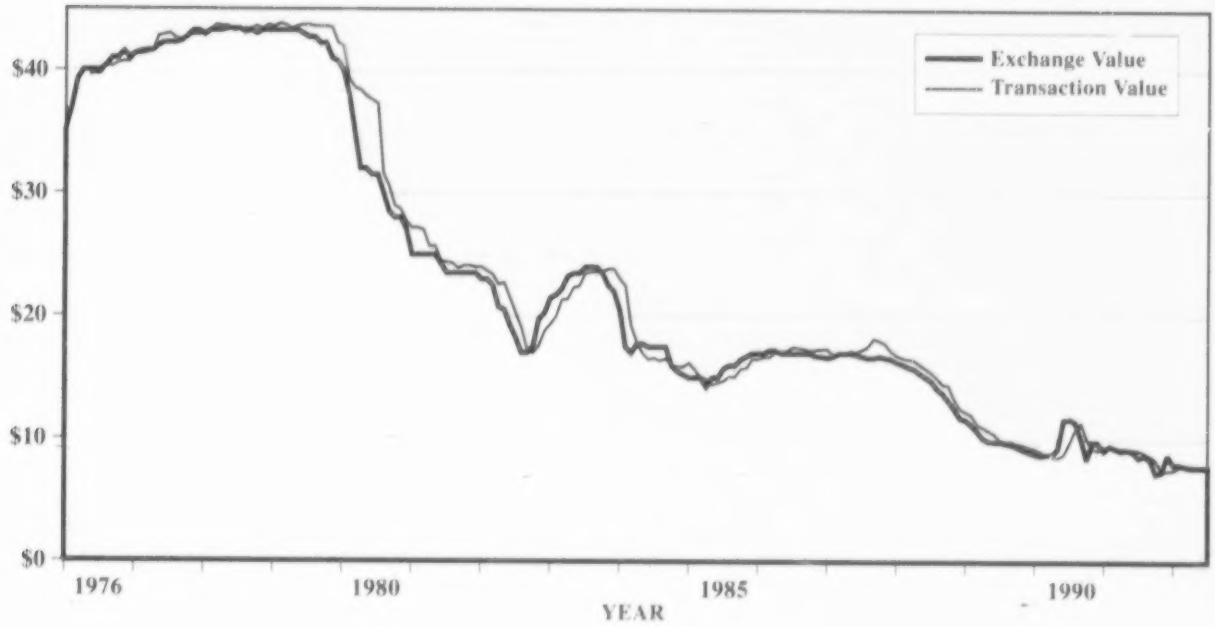
© NUEXCO 1992

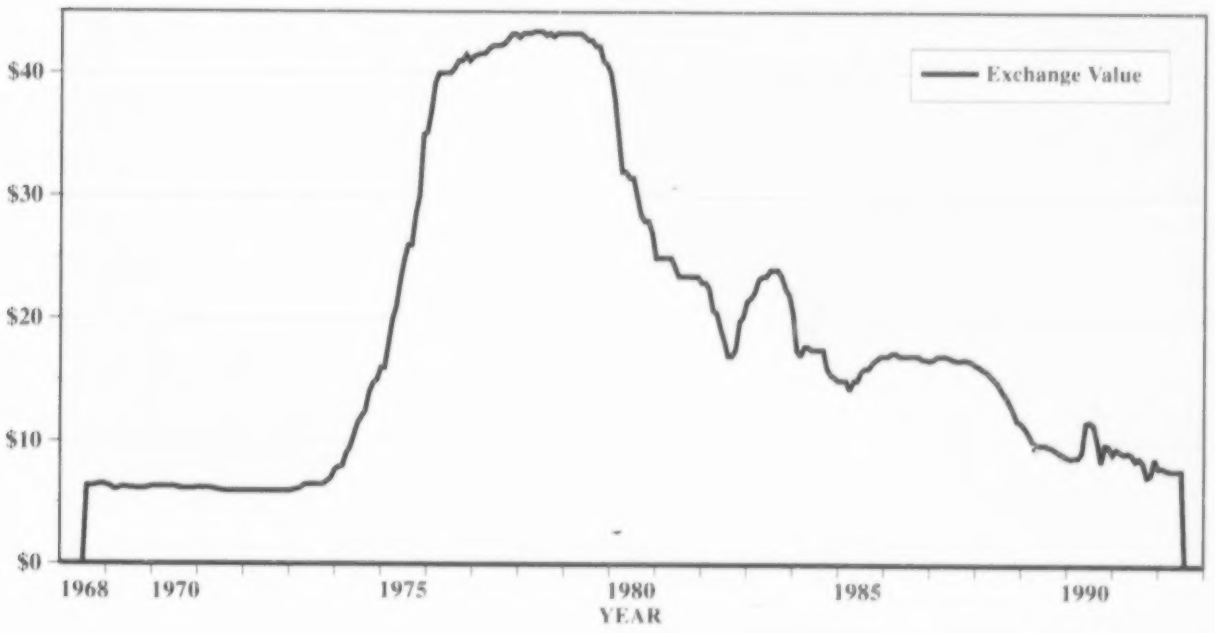
NUEXCO

HISTORICAL MARKET DATA

NUEXCO HISTORICAL EXCHANGE VALUE AND TRANSACTION VALUE

(in US dollars per pound U_3O_8)





© NUEXCO 1992

HISTORICAL MARKET VALUES

Exchange Values

Year	Determined as of the last day of the month indicated ($US/lb U_3O_8)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	15.40	15.10	14.75	14.15	13.75	13.15	12.50	11.75
1989	11.60	11.20	10.70	10.10	9.85	9.80	9.80	9.70	9.60	9.40	9.20	9.00
1990	8.85	8.70	8.80	8.80	9.25	11.60	11.70	11.45	10.10	8.35	9.80	9.70
1991	9.10	9.50	9.30	9.10	9.20	9.05	8.55	8.75	8.40	7.25	7.40	8.75
1992	8.00	8.00	7.85	7.75	7.75	7.75	**7.75**					

US Premium (Relative to the Exchange Value)

Year	Determined as of the last day of the month indicated ($US/lb U_3O_8)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	0.25	0.60	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

© NUEXCO 1992

NUEXCO

HISTORICAL MARKET DATA

UF_6 Values

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	46.75	47.00	47.00	47.00
1988	46.50	46.00	45.50	45.25	44.75	44.00	42.75	41.00	40.75	39.00	37.50	35.50
1989	34.75	34.00	33.00	30.50	30.25	30.25	30.00	29.75	29.75	28.25	27.75	26.50
1990	25.90	25.25	24.40	24.40	25.50	32.00	32.50	32.25	29.50	24.75	28.75	28.75
1991	27.50	27.75	27.50	27.25	27.60	27.25	25.75	26.25	25.50	22.75	22.75	26.00
1992	24.50	24.25	24.00	23.75	23.60	23.60	**23.50**					

US Premium (Relative to the UF_6 Value)

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	2.50	2.50
1987	2.50	2.50	3.50	3.00	2.25	1.75	6.50	6.00	4.25	3.10	2.25	2.00
1988	1.25	1.25	0.50	0.50	1.00	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

Conversion Values

Year	Determined as of the last day of the month indicated ($US/lb U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.90	1.90	1.90
1988	1.90	1.80	1.80	1.80	1.80	1.80	1.85	1.95	1.95	1.95	1.95	1.95
1989	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.90	1.90	1.80	1.75	1.65
1990	1.50	1.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
1991	1.45	1.45	1.45	1.45	1.50	1.50	1.50	1.60	1.55	1.55	1.55	1.55
1992	1.60	1.60	1.60	1.60	1.60	1.50	**1.50**					

© NUEXCO 1992

Transaction Values

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.60	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.15	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	16.10	15.80	15.45	15.00	14.50	14.40	13.30	12.50
1989	12.25	12.00	11.25	11.00	10.75	10.45	9.95	9.80	9.80	9.65	9.55	9.40
1990	9.25	9.05	8.75	8.65	8.55	8.80	9.75	10.80	11.40	10.10	9.30	9.15
1991	9.40	9.45	9.35	9.30	9.30	9.20	9.15	8.95	8.70	8.35	7.45	7.50
1992	7.55	7.80	7.95	7.90	7.85	7.80	**7.75**					

SWU Values

Determined as of the last day of the month indicated ($US per SWU)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	80	80	80	80	75	78	78	78	78	78	80	80
1987	80	80	77	77	75	73	75	75	73	69	73	73
1988	73	73	70	68	68	68	68	65	65	65	65	65
1989	65	67	67	67	66	66	66	65	63	59	57	54
1990	54	50	50	50	50	50	50	50	50	51	51	51
1991	51	50	52	52	54	59	66	67	67	68	68	70
1992	71	70	69	67	65	65	**66**					

© NUEXCO 1992

NUEXCO

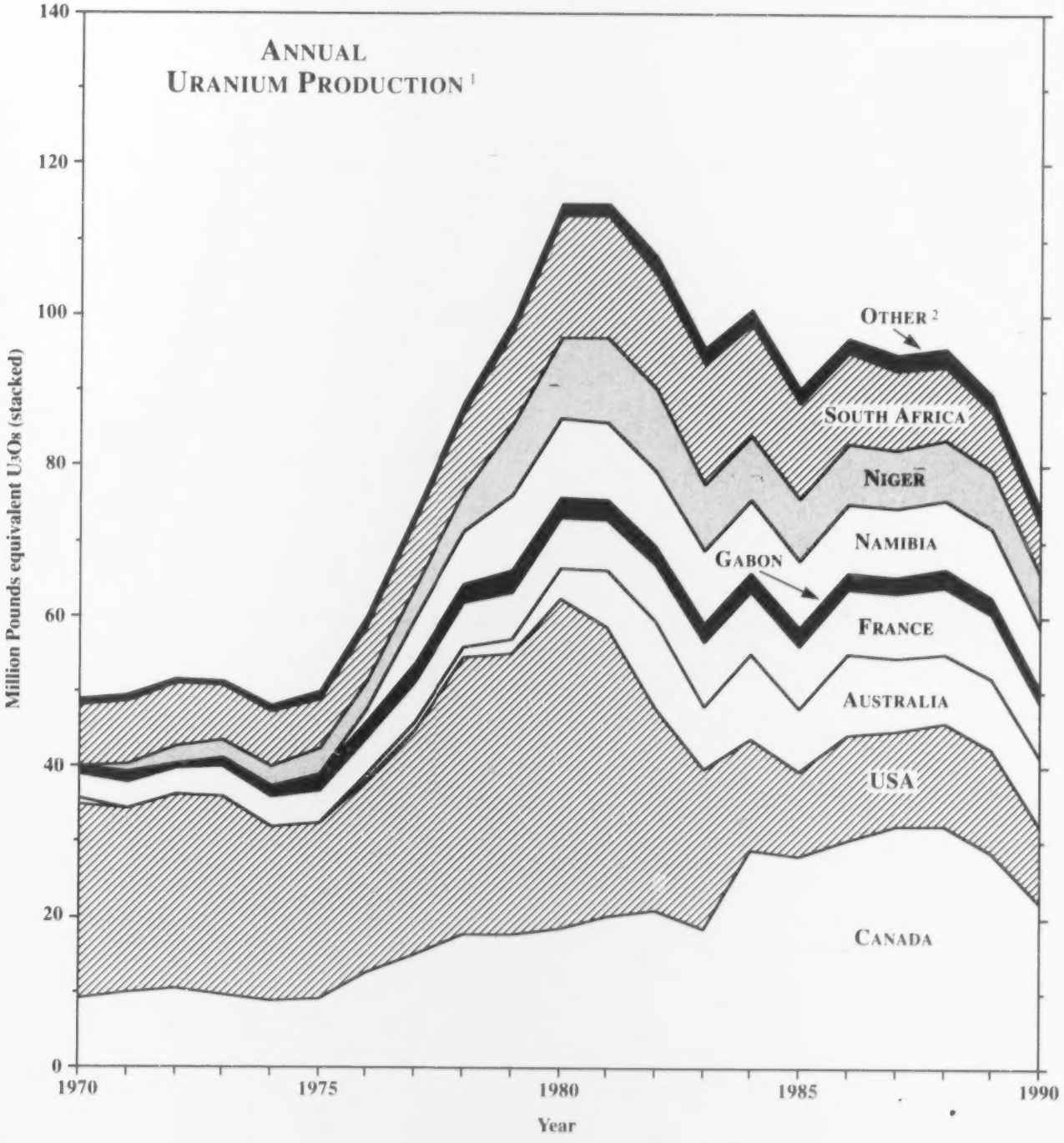
HISTORICAL MARKET DATA

Loan Rates

Year	Determined as of the last day of the month indicated (Percent per Annum)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	4.00	4.00	4.00	4.00	4.00
1969	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00
1970	6.00	6.20	6.40	6.50	6.50	6.50	6.50	5.00	6.50	6.00	5.50	5.50
1971	5.00	4.75	4.75	4.75	5.00	5.25	5.25	5.25	5.25	5.25	4.50	4.50
1972	4.00	4.00	4.00	4.50	4.50	4.50	5.00	5.00	5.00	5.00	5.00	5.00
1973	5.50	5.50	5.75	5.75	6.00	6.25	7.00	7.00	7.00	7.00	7.50	8.00
1974	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
1975	8.00	7.00	7.00	7.00	7.00	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1976	6.50	6.50	6.50	6.50	*	*	*	*	*	*	*	*
1977	*	*	*	*	6.50	6.50	6.50	6.75	7.25	7.25	7.25	7.25
1978	7.25	7.00	7.00	7.00	7.00	7.50	7.75	7.75	7.75	7.00	7.00	7.00
1979	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1980	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1981	7.00	7.00	7.00	7.00	7.00	5.50	5.50	5.50	5.50	6.00	6.00	6.00
1982	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1983	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1984	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1985	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
1986	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
1987	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	3.50	3.50
1988	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1989	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1990	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1991	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.00
1992	3.00	3.00	3.00	3.00	3.00	3.00	**3.00**					

* Float with Prime Rate

© NUEXCO 1992



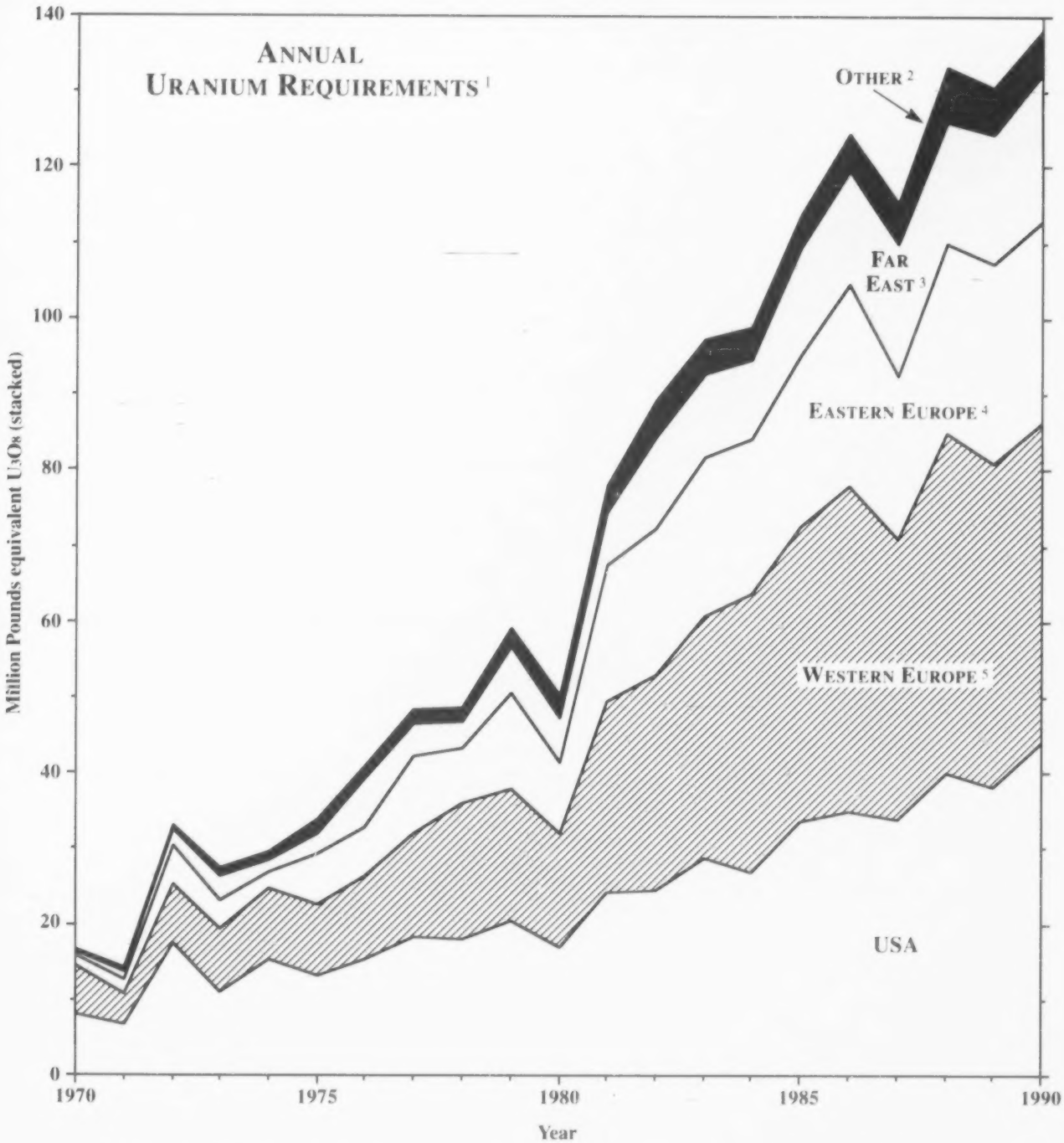
[1] Estimated western world uranium production in 1990 totalled 74.5 million pounds equivalent U_3O_8 —
(Australia: 9.1 – Canada: 22.0 – France: 7.4 – Gabon: 1.8 – Namibia: 8.0 – Niger: 7.4 – South Africa: 6.4 – USA: 10.2 – Other[2]: 2.2)

[2] **Other** includes: Argentina, Belgium, Brazil, India, Pakistan, Portugal, Spain, former West Germany, and Yugoslavia (Slovenia)

© NUEXCO 1992

NUEXCO

HISTORICAL MARKET DATA



[1] Calculated by NUEXCO based on actual completion dates and operating performance, and NUEXCO's estimate of enriching tails assay.
[2] **Other** includes: Argentina, Brazil, Canada, India, Mexico, Pakistan, and South Africa.
[3] **Far East** includes: Japan, People's Republic of China, South Korea, and Taiwan.
[4] **Eastern Europe** includes: Bulgaria, Czechoslovakia, former East Germany, Finland, Hungary, former Soviet Union, and Yugoslavia (Slovenia).
[5] **Western Europe** includes: Belgium, France, former West Germany, Italy, The Netherlands, Spain, Sweden, Switzerland, and UK.

© NUEXCO 1992

Australia

Year	Period	Consumer Price Index[1] (1989/1990 = 100)	Price Index of Materials Used in Manufacturing Industry — All Groups[2] (1984/1985 = 100)	Average Weekly Ordinary Time Earnings — Adult Males — Australia[5] (Australian dollars)	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates[4] (June 1985 = 100)
1980	Avg.	47.4	83.1	—	69.6
1981	Avg.	51.9	85.9	—	76.1
1982	Avg.	57.7	89.0	—	86.4
1983	Avg.	56.9	96.9	—	89.9
1984	Avg.	66.0	98.0	—	96.0
1985	Avg.	70.5	107.3	—	100.0
1986	Avg.	76.9	101.5	—	104.9
1987	Avg.	83.4	108.9	465.88	112.9
1988	Avg.	89.4	111.8	496.90	115.4
1989	Avg.	96.2	117.0	534.65	126.0
1990	Avg.	103.2	123.4	571.43	129.7
1991	Avg.	106.5	120.1	600.35	133.7
Jan	1991	—	125.6	—	133.0
Feb	1991	—	121.5	597.70	133.0
Mar	1991	105.8	119.1	—	133.3
Apr	1991	—	117.6	—	133.3
May	1991	—	117.8	592.00	133.4
June	1991	106.0	120.4	—	133.4
July	1991	—	120.4	—	133.4
Aug	1991	—	119.9	599.50	133.8
Sept	1991	106.6	118.3	—	134.2
Oct	1991	—	118.7	—	134.3
Nov	1991	—	120.6	612.20	134.4
Dec	1991	107.6	121.2	—	134.5
Jan	1992	—	120.9	—	134.7
Feb	1992	—	120.9	625.20	134.7
Mar	1992	107.6	120.0	—	134.8
Apr	1992	—	120.5	—	134.8
May	1992	—	122.4	—	—

P = Preliminary **R** = Revised since last month

1 Monthly data for the period 1967 to 1990 appears in NUEXCO Monthly Report 278.

2 Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: Financial year July 1989 to June 1990 = 100.0). Figures shown at end of quarter represent quarterly average. Base year changed from 1980/81 in Monthly Report 286.

3 Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (CATALOGUE No. 6411.0).

4 Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (CATALOGUE No. 6312.0). Figures for the latest fourteen months shown are subject to revision.

5 Australian Bureau of Statistics, Canberra: "Average Weekly Earnings, States & Australia" (CATALOGUE No. 6302.0).

© NUEXCO 1992

NUEXCO

GOVERNMENT STATISTICS

Canada

Year	Period	Industrial Products Price Index: All Commodities [1] (1986 = 100) [2]	Consumer Price Index: All Items (1986 = 100) [3]	Wage-earner Data: Average Hourly Earnings (C$) [4] Uranium Mines (SIC 057)	Metal Mines (SIC 061)	Mines, Quarries and Oil Wells (SIC 061-092)	Metal Rolling, Casting and Extruding (SIC 299)	Chemicals and Chemical Products Industries (SIC 371-379)
1980	Avg.	75.9	67.2	—·—	—·—	—·—	—·—	—·—
1981	Avg.	83.6	75.5	—·—	—·—	—·—	—·—	—·—
1982	Avg.	89.0	83.7	—·—	—·—	—·—	—·—	—·—
1983	Avg.	92.1	88.5	17.22	15.27R	14.58	10.17	11.03
1984	Avg.	96.3	92.4	17.89	16.25R	15.29	10.59	11.67
1985	Avg.	99.0	96.0	18.53	16.73R	15.83	11.54	12.14
1986	Avg.	100.0	100.0	19.38	16.88R	15.98	12.20	12.65
1987	Avg.	102.8	104.4	20.12	17.16R	16.25	13.04	13.22
1988	Avg.	107.2	108.6	20.91	18.60R	17.22	13.58	13.72
1989	Avg.	109.4	114.0	21.97	19.60R	18.37	14.02	14.31
1990	Avg.	109.7	119.4	22.90	20.53R	19.11	14.88	15.13
1991	Avg.	108.6	126.2	24.35	22.44R	20.59	14.94	16.22
Jan	1991	111.1	125.0	23.79	21.53R	19.94	14.86	15.51
Feb	1991	110.6	125.0	25.23	22.32R	20.39	14.82	15.84
Mar	1991	109.8	125.5	24.19	22.17R	20.57	15.50	16.19
Apr	1991	109.1	125.5	24.77	22.20R	20.57	14.76	16.28
May	1991	108.6	126.1	24.38	21.86R	20.51	15.04	16.26
June	1991	108.5	126.7	23.58	21.96R	20.10	14.67	16.25
July	1991	108.2	126.8	24.70	22.52R	20.17	14.52	16.07
Aug	1991	107.8	126.9	23.78	24.42R	20.96	14.72	16.01
Sept	1991	107.6	126.7	24.23	22.43R	20.61	14.95	16.40
Oct	1991	107.3	126.5	24.40	22.42R	20.80	15.13	16.43
Nov	1991	107.3	127.0	24.58	22.68R	21.05	15.00	16.46
Dec	1991	107.2	126.4	24.53	22.80R	21.39	15.30	16.92
Jan	1992	107.2	127.0	24.79	22.78R	21.48	15.78	16.91
Feb	1992	108.1R	127.1	24.42	22.60R	21.41	16.18	16.82
Mar	1992	108.2	127.5	24.92	22.92R	21.37	16.31	16.62
Apr	1992	108.1R	127.6	**[5]	23.39R	22.04R	16.60R	16.69R
May	1992	108.7R	127.8	**	23.36P	21.53P	16.44P	16.79P
June	1992	108.7	128.1	**	—·—	—·—	—·—	—·—

P = Preliminary **R** = Revised since last month

[1] Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (CATALOGUE 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Monthly data for the period 1967 to 1990 is found in NUEXCO Monthly Report 278.

[2] New Base Year of 1986 as of NUEXCO Monthly Report 266. Previous Base Year was 1981.

[3] New Base Year of 1986 as of NUEXCO Monthly Report 264. Previous Base Year was 1981.

[4] Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours." Monthly data for the period 1983 to 1990 is found in NUEXCO Monthly Report 278. SIC number revisions shown starting in Monthly Report 287.

[5] As of April 1992, Statistics Canada no longer provides specific information on uranium mine wages. The data has been included with Metal Mines (SIC 061).

© NUEXCO 1992

South Africa

Year	Period	Average Declared Working Costs per Metric Ton of Gold Ore Milled [1] (Rand)	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled [2] (March 1982 = 100)	Consumer Price Index [3] (1990 = 100)	Production Price Index All Groups [4] (1990 = 100)	Total Employment in Mining and Quarrying [5]	Total Salaries and Wages in Mining and Quarrying [5] (1,000 Rand)
							Annual Total [6]
1980	Avg.	35.50	—	25.5	27.7	709,042	2,237,689
1981	Avg.	41.87	—	29.4	31.5	722,918	2,756,928
1982	Avg.	47.23	103.9	33.7	35.9	702,041	3,181,584
1983	Avg.	51.88	115.0	37.8	39.7	700,901	3,563,282
1984	Avg.	58.95	130.3	42.2	43.0	711,511	4,134,390
1985	Avg.	68.70	151.7	49.1	50.3	724,587	4,778,612
1986	Avg.	80.18	177.9	58.2	60.1	756,637	5,767,950
1987	Avg.	95.01	223.1	67.6	68.5	751,864	6,911,395
1988	Avg.	106.69	241.1	76.2	77.5	705,355	7,774,054
1989	Avg.	116.65	273.0	87.4	89.3	700,360	8,833,934
1990	Avg.	129.37	305.3	100.0	100.0	677,742	10,193,209
1991	Avg.	136.06	322.4	115.1	111.4	630,722	10,934,073
							Monthly Total
Jan	1991	—	—	107.7	108.6	648,944	935,839
Feb	1991	—	—	109.0	109.0	650,948	893,373
Mar	1991	137.66	323.82	110.0	108.2	651,843	924,930
Apr	1991	—	—	111.5	108.8	639,939	887,722
May	1991	—	—	113.2	109.8	630,481	887,107
June	1991	134.65	317.23	114.0	110.3	640,908	890,595
July	1991	—	—	115.5	111.2	637,581	881,182
Aug	1991	—	—	117.1	112.0	633,699	963,710
Sept	1991	137.11	329.05	118.7	113.2	639,535	1,014,424
Oct	1991	—	—	119.8	114.8	584,435	860,529
Nov	1991	—	—	120.9	115.3	602,461	853,864
Dec	1991	134.81	319.33	123.8	115.8	602,486	940,798
Jan	1992	—	—	125.1	115.9	622,143	953,440
Feb	1992	—	—	126.2	116.3	618,114	925,858
Mar	1992	139.69	331.46	127.3	116.9	620,767	954,626
Apr	1992	—	—	128.9	118.4	—	—
May	1992	—	—	129.9	119.4	—	—
June	1992	140.69	334.63	131.2	—	—	—

P = Preliminary **R** = Revised since last month

[1] Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly. Historical Data by month appears in NUEXCO Monthly Report 278.

[2] Page 16 of Report 178 contains description and calculation of index.

[3] Central Statistical Service, Pretoria: All income groups-weighted average. Historical Data by month appears in NUEXCO Monthly Report 278.

[4] Central Statistical Service, Pretoria: All commodities for consumption in South Africa. Base Year changed from 1985 to 1990 in NUEXCO Monthly Report 284.

[5] Central Statistical Service, Pretoria: Historical Data by month appears in NUEXCO Monthly Report 236.

[6] Annual total is shown, rather than monthly average, for indicated year.

© NUEXCO 1992

NUEXCO

GOVERNMENT STATISTICS

United States

Year	Period	Producer Price Index [1] Industrial Commodities (1982=100)	Producer Price Index [1] All Commodities (1982=100)	Consumer Price Index [2] (1982-84=100)	GNP Implicit Price Deflator [3] (1987=100)	GDP Implicit Price Deflator [3] (1987=100)	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$) [4] Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.	88.0	89.8	82.4	71.7	71.7	10.26	10.63	8.31	6.94
1981	Avg.	97.4	98.0	90.9	78.9	78.9	11.55	11.98	9.12	7.62
1982	Avg.	100.0	100.0	96.5	83.8	83.8	12.31	12.93	9.96	8.21
1983	Avg.	101.1	101.3	99.6	87.2	87.2	12.58	13.43	10.58	8.66
1984	Avg.	103.3	103.7	103.9	91.1**R**	91.0	13.05	13.43	11.07	9.04
1985	Avg.	103.7	103.2	107.6	94.4	94.4	13.38	13.74	11.57	9.46
1986	Avg.	100.0	100.2	109.6	96.9	96.9	12.46	13.48	11.98	9.65
1987	Avg.	102.6	102.8	113.6	100.0	100.0	12.52	12.98	12.37	9.88
1988	Avg.	106.3	106.9	118.3	103.9	103.9	13.24	13.26	12.71	9.79
1989	Avg.	111.6	112.2	124.0	108.5**R**	108.5	13.59	13.72	13.09	10.05
1990	Avg.	115.8	116.3	130.7	113.2**R**	113.2	14.10	14.36	13.54	10.32
1991	Avg.	116.5	116.5	136.2	117.8**R**	117.8	14.89	14.64	14.07	10.73
Jan	1991	119.3	119.0	134.6	—	—	14.73	14.63	13.85	10.60
Feb	1991	117.2	117.2	134.8	—	—	14.80	14.55	13.81	10.59
Mar	1991	115.6	116.1	135.0	116.4**R**	116.5	14.93	14.55	13.85	10.55
Apr	1991	115.6	116.0	135.2	—	—	14.85	14.56	13.96	10.63
May	1991	116.1	116.5	135.6	—	—	14.79	14.52	14.01	10.66
June	1991	116.1	116.4	136.0	117.4**R**	117.5	14.88	14.51	14.05	10.74
July	1991	116.0	116.1	136.2	—	—	15.09	14.56	14.16	10.77
Aug	1991	116.3	116.2	136.6	—	—	14.82	14.64	14.06	10.78
Sept	1991	116.3	116.1	137.2	118.2**R**	118.2	15.04	14.59	14.21	10.84
Oct	1991	116.7	116.4	137.4	—	—	14.94	14.75	14.25	10.78
Nov	1991	116.7	116.4	137.8	—	—	15.29	14.89	14.27	10.88
Dec	1991	116.1	115.9	137.9	118.9**R**	118.9	15.13	14.87	14.34	10.96
Jan	1992	115.7	115.6	138.1	—	—	15.06	14.74	14.30	10.90
Feb	1992	116.0	116.0**R**	138.6	—	—	15.22	14.67	14.29	10.90
Mar	1992	115.9	116.1	139.3	119.8**R**	119.8	15.05	14.57	14.26	10.92
Apr	1992	116.3	116.3	139.5	—	—	15.02**R**	14.61**R**	14.39	10.98**R**
May	1992	117.2	117.1	139.7	—	—	15.10**P**	14.77**P**	14.40**R**	11.00**R**
June	1992	118.0	117.8	140.2	—	120.5	—·—	—·—	14.41**P**	11.06**P**

P = Preliminary **R** = Revised since last month

[1] US Bureau of Labor Statistics, Washington, DC: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents. Historical data is presented in NUEXCO Monthly Report 278.

[2] US Bureau of Labor Statistics, Washington, DC: Consumer Price Index for All Urban Consumers, US City Average, All Items. Historical data is presented in NUEXCO Monthly Report 278.

[3] US Department of Commerce, Washington, DC: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The Gross National Product (GNP) and Gross Domestic Product (GDP) Implicit Price Deflators (IDP) are published quarterly, and seasonally adjusted. Historical data for the GNP IPD is presented in Report 278. GDP IPD information first published in NUEXCO Monthly Report 288. GNP IPD Base Year change from 1982 to 1987 in NUEXCO Monthly Report 284.

[4] US Bureau of Labor Statistics, Washington, DC: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Historical data is presented in NUEXCO Monthly Report 278.

© NUEXCO 1992

Uranium Deliveries To The European Community[1]

— Compiled from data published by the Euratom Supply Agency —

Year	Volume of Deliveries to the EC[2] (MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts[3] Average Price		Spot Contracts[3] Average Price	
			in ECU per pound U_3O_8	in US Dollars per pound U_3O_8	in ECU per pound U_3O_8	in US Dollars per pound U_3O_8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00
1986	12,000	9.5	ECU 31.50	$31.00	ECU 18.00	$17.75
1987	14,000	17.0	ECU 28.25	$32.50	ECU 15.00	$17.25
1988	12,500	4.5	ECU 26.92	$31.82	ECU 13.65	$16.13
1989	13,500	11.5	ECU 26.63	$29.35	ECU 11.04	$12.19
1990	12,800	16.7	ECU 23.08	$29.39	ECU 7.60	$ 9.68
1991	12,900	13.0P	ECU 21.06	$26.09	ECU 7.31	$ 9.05

P = Preliminary **R** = Revised since last month

1 The twelve European Community member nations are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EEC.

2 The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

3 For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar. Exchange rates are published by European Communities Statistical Office and the International Monetary Fund.

© NUEXCO 1992

NUEXCO

GOVERNMENT STATISTICS

US Uranium Marketing Data

— Compiled from data published by the US Energy Information Administration [1] —

Year	Total Production (million pounds U_3O_8)	Deliveries to Domestic Utilities From US Suppliers [2] (million pounds U_3O_8)	Average Price of Delivered Uranium [2] ($/lb. U_3O_8)	Quantity of Uranium Imported [3] (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	27.6	$16.10	3.6	n/a	1.2
1977	29.9	27.8	$19.75	5.6	n/a	4.0
1978	37.0	31.6	$21.60	5.2	n/a	6.8
1979	37.5	33.0	$23.85	3.0	n/a	6.2
1980	43.7	35.0	$28.15	3.6	$43.10	5.8
1981	38.5	32.6	$34.65	6.6	$32.90	4.4
1982	26.9	23.5	$38.37	17.1	$25.19	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3
1986	13.5	18.9	$30.01	13.5	$20.07	1.6
1987	13.0	20.8	$27.37	15.1	$19.14	1.0
1988	13.1	17.6	$26.15	15.8	$19.03	3.3
1989	13.8	18.4	$19.56	13.1	$16.75	2.1
1990	8.9	20.5	$15.70	23.7	$12.55	2.0

P = Preliminary **R** = Revised since last month

[1] Sources: 1976-1983: US Department of Energy/Energy Information Administration, *Survey of United States Marketing Activity.*
1984-1990: Energy Information Administration, *Uranium Industry Annual.*

[2] Data for 1976-1981 includes both domestic utilities and agents.

[3] Includes imports by domestic utilities and domestic suppliers.

© NUEXCO 1992

NUEXCO

INTERNATIONAL ADVISORY COMMITTEE

J. Robert (Bob) Wolcott
Chairman
USA

* * *

Lars Halle
Sweden

O. J. C. (John) Runnalls
Canada

George J. Stathakis
USA

James C. C. Stewart
United Kingdom

W. Bryan Webster
USA

Ken C. Whyte
South Africa

Bertram Wolfe
USA

REPRESENTATIVES

SOUTH AFRICA:

Chris I. Von Christierson
Southern Prospecting (Pty) Limited
Mailing Address:
Post Office Box 61409
Marshalltown 2107
Republic of South Africa
Street Address:
7th Floor, Marshall Place
66 Marshall Street
Johannesburg 2001
Telephone: (27-11) 834-4211
Fax: (27-11) 834-6343
Telex: 4-89878-SA

TAIWAN:

Dr. Steve H. K. Wang
Southeast Engineering Corporation
Yu-Ming Mansion
7, Roosevelt Road, Sec. 1, 7th Floor
Taipei, 10757, Taiwan R.O.C.
Telephone: (886-2) 321-0216
Fax: (886-2) 394-2621
Telex: 11285 (SENCORP)

UNITED STATES:

Harold C. Lindberg
83-A Hardee Lane
Whispering Pines, North Carolina 28327
Telephone: (919) 949-3622
Fax: (919) 949-2626

Ralph O. Smith
141 Braemar Drive
Cheshire, Connecticut 06410
Telephone: (203) 272-6246
Fax: (203) 271-1346

INTERNATIONAL HEADQUARTERS

Three Park Central, Suite 1000
1515 Arapahoe Street
Denver, Colorado 80202 USA

Telephone: (303) 899-4500
Telefax: (303) 899-4555
Telex: 450202/NUEXCO